

**Monday**  
**November 17, 1986**

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**Part III**

**Environmental  
Protection Agency**

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**40 CFR Part 300**

**Emergency Planning and Community  
Right to Know Programs; Interim Final  
Rule and Proposed Rule Cross-Reference**

# ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 300

SW H-FRL-3113-61

## Emergency Planning and Community Right to Know Programs

**AGENCY:** U.S. Environmental Protection Agency (EPA).

**ACTION:** Interim final rule.

**SUMMARY:** Section 302 of the Superfund Amendments and Reauthorization Act of 1986 (SARA), signed into law on October 17, 1986, requires the Administrator of EPA to publish a list of extremely hazardous substances within 30 days. The Administrator is also required to simultaneously publish an interim final regulation establishing a threshold planning quantity for each substance on the list and initiate a rulemaking to finalize these regulations. The list and planning quantities trigger emergency planning in States and local communities under SARA. The purpose of this rule is to publish the statutorily prescribed list of extremely hazardous substances and the corresponding threshold planning quantities for those substances. This rule also codifies the reporting and notification requirements under SARA for facilities at which extremely hazardous substances are present. Finally, a companion proposed rule, published elsewhere in today's Federal Register, initiates a rulemaking to revise the list of substances, the threshold planning quantities and reporting regulations.

**EFFECTIVE DATES:** This rule becomes effective on: November 17, 1986. Other dates relevant to this rule include the following:

1. The emergency release notification requirements become effective on November 17, 1986.
2. State emergency response commissions should be established by April 17, 1987.
3. Facility notifications for emergency planning are required by May 17, 1987.
4. State commissions should establish emergency planning districts by July 17, 1987.
5. State Commissions should establish local emergency planning committees by August 17, 1987.
6. Facility notifications to local committees concerning facility representatives are due by September 17, 1987.

**COMMENTS:** Written comments should be submitted on or before January 2, 1987.

**ADDRESSES:** Comments: Written comments should be submitted in

triplicate to Preparedness Staff, Superfund Docket Clerk, Attention: Docket Number 300PQ, Superfund Docket Room Lower Garage, U.S. Environmental Protection Agency, Mail Stop WH 548D, 401 M Street SW., Washington, DC 20460.

Docket: Copies of materials relevant to this rulemaking are contained in the Superfund Docket located in Room Lower Garage at the U.S. Environmental Protection Agency, 401 M Street, SW., Washington, DC 20460. The docket is available for inspection by appointment only between the hours of 9:00 a.m. and 4:00 p.m. Monday through Friday, excluding federal holidays. The docket phone number is (202) 382-3046. As provided in 40 CFR Part 2, a reasonable fee may be charged for copying services.

**FOR FURTHER INFORMATION CONTACT:** Richard A. Horner, Chemical Engineer, Preparedness Staff, Office of Solid Waste and Emergency Response, WH-548, U.S. Environmental Protection Agency, 401 M Street, SW., Washington, DC 20460, or the Chemical Emergency Preparedness Hotline at 1-800/535-0202, in Washington, DC at 1-202/479-2449.

**SUPPLEMENTARY INFORMATION:** The contents of today's preamble are listed in the following outline:

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## I. Introduction

### A. Statutory Authority

These regulations are issued under Title III of the Superfund Amendments and Reauthorization Act of 1986 (Pub. L. 99-499), ("SARA" of "the Act"). Title III of SARA is known as the Emergency Planning and Community Right-to-know Act of 1986.

### B. Background

#### 1. Superfund Amendments and Reauthorization Act of 1986 (SARA)

On October 17, 1986, the President signed into law the Superfund Amendments and Reauthorization Act of 1986 ("SARA") which revises and extends the authorities established under the Comprehensive Environmental Response, Compensation and Liability Act of 1980 ("CERCLA"). Commonly known as "Superfund," CERCLA provides authority for federal cleanup of abandoned toxic waste sites and response to releases of hazardous substances. Title III of SARA establishes new authorities for emergency planning and preparedness, community right to know reporting, and toxic chemical release reporting.

#### 2. Title III

Title III of SARA, also known as the "Emergency Planning and Community Right-to-Know Act of 1986", is intended to encourage and support emergency planning efforts at the State and local level and provide residents and local governments with information concerning potential chemical hazards present in their communities.

The emergency planning requirements of this Act recognize the need to establish and maintain contingency plans for responding to chemical accidents which can inflict health and environmental damage as well as cause significant disruption within a community.

Title III is organized into three subtitles. Subtitle A, which establishes the framework for local emergency planning, will be described in more detail in the following section. Subtitle B provides the mechanism for community awareness with respect to hazardous chemicals present in the locality. This information is critical for effective local contingency planning. Subtitle B includes requirements for the submission of material safety data sheets and emergency and hazardous

chemical inventory forms to State and local governments, and the submission of toxic chemical release forms to the States and the Agency. Subtitle C contains general provisions concerning trade secret protection, enforcement, citizen suits, and public availability of information.

### 3. Subtitle A

Subtitle A of Title III is concerned primarily with emergency planning programs at the State and local levels. Section 301 requires each State to establish an emergency response commission by April 17, 1987. The State emergency response commission will have several tasks critical to the implementation of local contingency planning and response efforts. It will be responsible for establishing emergency planning districts and appointing local emergency planning committees. The Commission will also be responsible for the supervision and coordination of the activities of the local emergency planning committees.

Section 302 requires the Administrator of EPA to publish a list of extremely hazardous substances and threshold planning quantities for such substances. Any facility where an extremely hazardous substance is present in an amount in excess of the threshold planning quantity is required to notify the State commission by May 17, 1986. Other facilities may also be designated by the Commission or the Governor.

Section 303 governs the development of comprehensive emergency response plans by the local emergency planning committees and provision of facility information to the committee. Section 304 establishes requirements for immediate reporting of certain releases of hazardous substances to the local planning committees and the State emergency response commission, similar to the release reporting provisions under section 103 of CERCLA. Section 304 also requires follow up reports on the release, its effects, and response actions taken.

Finally, section 305 addresses emergency preparedness and training, with special emphasis on hazardous chemicals. The Administrator is also required under section 305 to conduct a review of emergency systems.

### 4. Section 302

Section 302 defines the specific list of extremely hazardous substances and requires EPA to publish the list within 30 days after the enactment of SARA. The list of extremely hazardous substances is defined in section 302 as "the list of substances published in November, 1985 by the Administrator in Appendix A of

the Chemical Emergency Preparedness Program Interim Guidance". This list was established by EPA to identify chemical substances which could cause serious irreversible health effects from accidental releases.

Section 302 further requires EPA to establish threshold planning quantities for each of the 402 extremely hazardous substances through an interim final regulation. At the same time, EPA must initiate a rulemaking effort to finalize these threshold planning quantities. This threshold planning quantity is the total amount of any listed extremely hazardous substance present at any one time at a facility, regardless of location, number of containers, or storage method, which will trigger the planning notification. Section 302 gives the Administrator broad flexibility in establishing these quantities. If EPA does not publish interim final rules establishing the threshold planning quantities by thirty days after enactment of SARA, then the threshold planning quantity becomes two pounds for each extremely hazardous substance.

Under section 302(a)(4) the Administrator may make revisions to the list and threshold planning quantities. Any revisions must take into account the toxicity, reactivity, volatility, dispersibility, combustibility, or flammability of a substance.

Toxicity must include any short- or long-term effect resulting from a short-term exposure to the substance in question. Thus, extremely hazardous substances are characterized as those which can cause serious health effects with only a single exposure.

A facility is subject to the emergency planning requirements of section 302 if any extremely hazardous substance is present at the facility in a quantity greater than the threshold planning quantity established for that substance. The Governor or the State emergency response commission may designate additional facilities to be covered if such designation is made after public notice and opportunity for comment.

Within seven months after enactment of SARA, May 17, 1987, the owner/operator of each facility subject to the provisions of section 302 must notify the State emergency response commission of the state in which it is located that it is subject to that Section. After May 17, 1987 an owner/operator must notify the State emergency response commission within sixty days after the facility begins handling an extremely hazardous substance. Failure to comply with these reporting provisions may, under section 325, result in injunctive relief or the imposition of a civil penalty in an

amount of \$10,000 for each day in which the violation continues.

Lastly, the State emergency response commission must provide the Administrator of EPA with information concerning the notifications received from any facility under section 302.

Today's rule publishes the list of extremely hazardous substances and corresponding threshold planning quantities, as required by section 302. This rule also codifies related statutory reporting requirements applicable to facilities at which extremely hazardous substances are present. Finally, today's rule represents an initiation of an Agency rulemaking to revise this rule as appropriate in response to public comment. A companion proposed rule, published elsewhere in today's Federal Register, specifically sets out for public comment all aspects of this final rule and proposes revisions to the list published today.

## II. Analysis of the Interim Final Rule

### A. Emergency Planning Program

The emergency planning program is a first step toward chemical emergency planning for extremely hazardous substances. After the enactment of Superfund, it became apparent that emergency response to accidental releases of hazardous substances, although vital to the protection of public health and the environment, was not enough protection against the possibility of the release of extremely hazardous substances. For many chemicals the magnitude of the endangerment to surrounding populations upon release is such that it is not sufficient merely to plan for cleanup of spills once they have occurred. Rather, it is important to facilitate emergency planning which can help prevent the accident and to prepare facilities and the surrounding or adjacent community for the contingency of a release and the resulting emergency response.

Particularly after the Bhopal, India disaster of December, 1984, it became clear that substances which are highly acutely toxic and have a high potential for becoming airborne posed a special problem for emergency response. In many cases, by the time any emergency response personnel can arrive on the scene of a release, the cloud has already done its damage to public health or the environment and dissipated. For such extremely hazardous substances, early comprehensive emergency planning for the possibility of a release is vital to effective public and environmental protection.

## 1. Purpose of the List and Threshold Planning Quantities

The extremely hazardous substances list of 402 substances was developed as part of the Chemical Emergency Preparedness Program (CEPP) and is the result of over a year of EPA effort. EPA initiated the CEPP as part of its ongoing preparedness responsibilities for hazardous substance releases under CERCLA and for addressing toxic substances under the Toxic Substances Control Act (TSCA). The program was announced in June, 1985, as part of the Agency's Air Toxics Strategy for addressing both continuing and accidental releases of toxic substances into the air. CEPP is designed to increase public awareness of chemical hazards in communities and to assist States and communities in developing preparedness programs and response capabilities for releases of hazardous chemicals into the environment.

The Agency first developed the extremely hazardous substances list as part of the CEPP along with guidance materials to aid localities in focusing on these chemicals to address the development of community emergency response plans. The list and guidance materials (issued November, 1985) were designed to enable a community to obtain information on the location of potential chemical hazards in the community. This information could be used to help the community take preventive actions and plan responses to accidental releases of these extremely hazardous substances. A notice of availability of the CEPP Interim Guidance was published in the *Federal Register* on December 17, 1985.

Title III of SARA mandates the type of program advocated by the Agency's CEPP. It requires State and local governments to establish the infrastructure needed to facilitate emergency planning and provides technical support to these programs. It also requires certain facilities to supply the information on chemicals present at the facility which is necessary for contingency planning.

The extremely hazardous substances list and its threshold planning quantities are intended to help the local community focus on the chemicals and facilities of the most immediate concern from a community emergency planning and response perspective. EPA strongly emphasizes, however, that while the list published today includes many of the chemicals which may pose an immediate hazard to a community upon release, it is not to be considered a list of all chemicals which are hazardous enough to require community emergency

response planning. There are tens of thousands of compounds and mixtures in commerce in the United States, and in specific circumstances, many of them could be considered toxic or otherwise dangerous. The list published today represents only a first step towards development of an effective emergency response planning effort at the community level. Without a preliminary list of this kind, it would be very difficult for most communities to know where to begin identification of potential chemical hazards among the many chemicals present in any locality.

Similarly, the threshold planning quantities are *not* absolute levels above which the extremely hazardous substances are dangerous and below which they pose no threat at all. Rather, the threshold planning quantities are intended to provide a "first cut" for community emergency response planners where these extremely hazardous substances are present. After identification of facilities at which extremely hazardous substances are present in quantities greater than the threshold planning quantities, the local community will have the basis for further analysis of the potential danger posed by these facilities. Also, they will be able to identify other facilities posing potential chemical risks to the locality, and develop contingency plans to protect its citizens from releases of hazardous chemicals. Sections 311 and 312 of Title III provide a mechanism through which a community will receive Material Safety Data Sheets and other information on extremely hazardous substances, as well as many other chemicals, from facilities which handle them. A community can then assess and initiate planning activities, if desirable, for quantities below the threshold planning quantity.

In addition to the assistance provided by the extremely hazardous substance list and the threshold planning quantities, community emergency response planners will be further aided by the National Response Team's proposed *Hazardous Materials Emergency Planning Guide* which is required under section 303(f) of Title III. This document will be available for public review and comment in December. A separate notice of availability will be published in the *Federal Register* at that time. The guidance document will be supplemented in 1987 with a technical publication developed by EPA to assist local emergency planning committees in the technical evaluation of potential chemical hazards and the prioritization of sites.

## 2. Responsibilities (Subtitle A)

Subtitle A establishes several notification responsibilities for facilities at which hazardous substances are present or from which hazardous substances are released. First, under section 302, each facility where any extremely hazardous substance is present at any one time in a quantity equal to or above the threshold planning quantity established for that substance must notify the State emergency response commission for the State in which it is located.

This notification must be provided within seven months after the enactment of SARA (May 17, 1987) or within 60 days from the time that the facility first becomes subject to the notification requirements in section 302, whichever is later.

Second, under section 303(d), these facilities must also designate a facility representative who will participate in the local emergency planning effort as a facility emergency response coordinator. This designation must be made by September 17, 1987 or 30 days after establishment of the local emergency response committee, whichever is earlier. Section 303(d) also requires facilities to provide the committee with information relevant to development or implementation of the local emergency response plan.

Section 304 requires notification by a facility at which a hazardous chemical is produced, used, or stored to the local planning committee and the State emergency response commission upon release of a reportable quantity (RQ) of any extremely hazardous substance or other hazardous substance identified under CERCLA section 101(14). This notification is required even if a threshold planning quantity of a substance is not present at the facility. Those extremely hazardous substances for which an RQ has not been established under CERCLA are given an RQ of one pound under section 304 of SARA. These RQ's will be adjusted in later regulation by EPA. Section 304 requires both an immediate release notification to the local committee and State commission and a follow-up report providing additional information on the release, its impacts, and any actions taken in response.

Under section 325, failure to comply with these responsibilities may result in the imposition of civil or criminal penalties. States, local governments, and citizens may also bring suit to enforce many sections of the Act.

### 3. Applicability

The emergency planning requirements under section 302 are applicable to all facilities which store, manufacture, process, use, or otherwise handle at any time an extremely hazardous substance in an amount above the threshold planning quantity established for that substance in today's rule. Additionally, after public notice and the opportunity for comment, the Governor may designate other facilities that will be subject to these regulations. "Facility", for the purposes of Title III, is defined as "all buildings, equipment, structures, and other stationary items which are located on a single site or on contiguous or adjacent sites and which are owned or operated by the same person (or by any person which controls, is controlled by, or under common control with, such person)."

For purposes of emergency release notification, under section 304 "facility" is defined in section 329 to also include transportation vessels or facilities. However, section 304 notification requirements apply only to facilities at which hazardous chemicals are produced, used, or stored and at which there is a release of an extremely hazardous substance or a CERCLA hazardous substance.

### 4. Responsibilities of the States and Local Communities Under Title III.

Title III also prescribes several requirements with respect to emergency planning for States and localities. First, under section 301(a) the Governor of each State is to appoint, within six months of the enactment of SARA, April 17, 1987, a State emergency response commission or designate a state agency to have this responsibility. Until the Governor appoints such a commission or state agency, responsibilities of the Commission under Title III remain with the Governor.

Section 301(b) further provides that the State emergency response commission will be responsible for the establishment of emergency planning districts in which local emergency planning committees will be formed. One month after the emergency planning districts are established, the State commission is responsible for appointing the local emergency planning committees.

Under section 301(c) local emergency planning committees will have the initial responsibility for establishing the community emergency response plans specified in section 303, and the ongoing responsibility for updating, revising, and exercising these plans.

### B. List of Extremely Hazardous Substances and Threshold Planning Quantities

#### 1. List of Extremely Hazardous Substances

a. *Statutory Requirement:* As stated above, the list of extremely hazardous substances is defined in section 302 to be the "same as the list of substances published in November 1985 by the Administrator in Appendix A of the Chemical Emergency Preparedness Program (CEPP) Interim Guidance." Section 302 requires the EPA to publish the list within 30 days of the enactment of SARA.

One of the goals of the CEPP was to increase community awareness of chemical hazards, specifically acutely toxic chemicals. To satisfy this goal, the Agency developed the toxicity criteria to assist communities in identifying acutely toxic chemicals present in their midst. Through identification of these chemicals, communities could establish priorities for developing comprehensive emergency response plans. To further assist the communities, the Agency applied toxicity criteria to develop a representative, but not exhaustive, list of acutely toxic chemicals. It is this representative list of 402 chemicals that is presently designated in section 302 as the list of extremely hazardous substances.

The following sections discuss the criteria for identifying extremely hazardous substances.

b. *Criteria for the List*—i. *Basis for the Criteria.* Considering the large number of chemicals in commerce and the variable nature of their individual inherent acute toxicities, the Agency assumed for the purposes of the CEPP, that it would be impractical for communities to evaluate all of them. The CEPP list was also based on the assumption that communities would want to focus emergency planning efforts on the most acutely toxic chemicals rather than on nontoxic chemicals or those exhibiting lesser acute toxicity. In an attempt to direct community planning efforts to these chemicals which, because of their inherent acute toxicity, are most likely to induce serious acute reactions following short term exposure, the Agency has specified selection criteria that can be applied to toxicity data to identify acutely toxic chemicals (referred to as "extremely hazardous substances" under Title III).

In defining the criteria, the Agency had to identify the health effects of concern and the data to be used. Because there are very few human acute toxicity data, the Agency elected to use

acute toxicity data derived from experiments with animals to infer potential for acute toxic effects in humans. The Agency assumed that humans and animals (mammals), on average, are similar in intrinsic susceptibility to toxic chemicals and that animal data can be used as a surrogate for human data. This assumption forms one basic premise of modern toxicology and is a key component in the regulation of toxic chemicals.

The Agency chose to utilize data on lethality because it represents the most immediate concern in an emergency situation. Additionally, such data can be used as a comparison among many substances whose mechanisms and sites of action may be markedly different. Moreover, acute lethality data for many chemicals are the most commonly reported toxicity information and are available in accessible databases. Lethality data from animal toxicity tests are generally expressed as the median lethal concentration (LC<sub>50</sub>) when the substance has been administered by inhalation or the median lethal dose (LD<sub>50</sub>) when the substance has been administered orally or dermally. These data represent dose levels or concentrations of a chemical that resulted in the death of 50 percent of the test animals exposed at the indicated dose level.

ii. *Criteria.* The Agency adopted the specific criteria shown in Table 1 to identify extremely hazardous substances that may present severe health hazards to humans following short term exposure to chemicals during a chemical accident or other emergency. The selection criteria are only screening tools to identify highly acutely toxic chemicals. Under these criteria, a chemical is to be considered a potential acute human toxicant if animal test data in any mammalian species are identified with a value less than or equal to that stated for the LC<sub>50</sub> or LD<sub>50</sub> criteria for any one of three exposure routes. Extremely hazardous substances are those defined with inhalation LC<sub>50</sub> values of less than or equal to 0.5 milligrams per liter of air, dermal LD<sub>50</sub> values of less than or equal to 50 milligrams per kilogram of body weight, or oral LD<sub>50</sub> values of less than or equal to 25 milligrams per kilogram of body weight. The specific values chosen are recognized by the scientific community as indicating a high potential for acute toxicity, and chemicals meeting the toxicity criteria are considered potential hazards.



TABLE 1—CRITERIA TO IDENTIFY ACUTELY TOXIC CHEMICALS THAT MAY PRESENT SEVERE HEALTH HAZARDS TO HUMANS EXPOSED DURING A CHEMICAL ACCIDENT OR OTHER EMERGENCY

Route of Exposure <sup>1</sup>	Acute Toxicity Measure <sup>2</sup>	Value
Inhalation.....	Median Lethal Concentration in Air (LC <sub>50</sub> ).....	Less than or equal to 0.5 milligrams per liter of air.
Dermal.....	Median Lethal Dose (LD <sub>50</sub> ).....	Less than or equal to 50 milligrams per kilogram of body weight.
Oral.....	Median Lethal Dose (LD <sub>50</sub> ).....	Less than or equal to 25 milligrams per kilogram of body weight.

<sup>1</sup> The route by which the test animals absorbed the chemical, i.e., by breathing it in air (inhalation), by absorbing it through the skin (dermal), or by ingestion (oral).

<sup>2</sup> LC<sub>50</sub>: The concentration of the chemical in air at which 50 percent of the test animals died. LD<sub>50</sub>: The dose which killed 50 percent of the test animals. In the absence of LC<sub>50</sub> or LD<sub>50</sub> data, LC<sub>100</sub> or LD<sub>100</sub> data should be used. LC<sub>100</sub>: Lethal Concentration Low, the lowest concentration in air at which any test animals died. LD<sub>100</sub>: Lethal Dose Low, the lowest dose at which any test animals died.

The primary route of exposure with which the Agency is concerned is inhalation. In using data on oral and dermal acute lethality to infer concern about inhalation toxicity, the Agency was not as much concerned with these specific routes of exposure in humans as with identifying compounds with inherent high potential for acute toxicity.

Even with the amount of animal data that are available, there exist chemicals for which there are no standard acute toxicity test data. In those cases where toxicity testing has not determined an LD<sub>50</sub> or LC<sub>50</sub>, the Agency selected an alternative measure of acute toxicity: the lowest dose or concentration at which some animals died following exposure (LD<sub>10</sub> or LC<sub>10</sub>). These values may be more variable than those provided from median lethality tests, but for the purposes of screening large numbers of chemicals, it was deemed necessary to provide a second level screening tool in preference to missing potentially toxic chemicals because they were not adequately tested.

The Agency chose to use data from the most sensitive mammalian species instead of data from only one specific species because at present it is not possible to predict which species is the appropriate surrogate for humans for a given chemical.

Acute inhalation toxicity testing depends upon the concentration of the chemical in air and the duration of the exposure periods. Because of this, LC<sub>50</sub> and LC<sub>10</sub> values for a chemical may vary depending upon how long the animals were exposed to the substance. The Agency chose also to make maximum use of available acute toxicity data to screen for acutely toxic chemicals and, therefore, chose to use LC<sub>50</sub> and LC<sub>10</sub> values with exposure periods up to 8 hours or with no reported exposure period. The Agency recognizes that this may be a conservative approach.

The screening criteria selected by the Agency are basically consistent with internationally accepted criteria used by

both the European Economic Community and the World Bank. However, the Agency has adopted a more conservative approach by modifying the selection criteria in three ways:

1. Lethality data are not limited to data on rats, but include data on the most sensitive mammalian species tested;

2. LC<sub>50</sub> data with inhalation exposure periods up to 8 hours are included as compared to using only data from 4 hour exposure tests; and

3. LD<sub>10</sub> and LC<sub>10</sub> data are used when LD<sub>50</sub> or LC<sub>50</sub> data are unavailable.

iii. Application of the Criteria. The screening criteria can be applied to any experimental data or data base on chemical substances that includes acute animal toxicity data. The Agency applied the criteria to a specific toxicity data base, the Registry of Toxic Effects of Chemical Substances (RTECS), maintained by the National Institute of Occupational Safety and Health (NIOSH). The RTECS data base was used as the principal source of toxicity data for identifying acutely toxic chemicals because it represents the most comprehensive repository of acute toxicity information available with basic toxicity information and other data on more than 79,000 chemicals. It is widely accepted and used as a toxicity data source by industry and regulatory agencies alike. Although RTECS is not formally peer-reviewed, the data presented are from scientific literature which has been edited by the scientific community before publication. The Agency recognizes the limitation associated with the lack of peer-review, but for the purposes of screening acute toxicity data, RTECS represents the single best source of information.

In addition, the Agency selected only those chemicals considered to be in current production by reviewing the non-confidential 1977 Toxic Substances Control Act (TSCA) Inventory and the current EPA list of active pesticide ingredients. The TSCA Inventory is a listing of chemicals in production at the

time the Inventory was compiled. Chemicals entering commerce since 1977 through the Premanufacturing Notice (PMN) review process under Section 5 of TSCA also were screened for acute toxicity data and compared to the criteria for possible inclusion on the list.

Radioactive materials and chemical substances in research and development stages, as well as those manufactured, processed, or distributed in commerce for use as food additives, drugs, or cosmetics are not listed in the TSCA inventory and hence, were not considered. If research chemicals that meet the criteria are produced for commercial use under TSCA or for pesticide use under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), EPA will identify such chemicals through its PMN review program or pesticide registration program and list them under section 302 in future rulemakings. The Agency solicits comments concerning the addition of chemicals in food, drugs, cosmetics and radioactive materials to the list of extremely hazardous substances.

iv. Other Toxic Chemicals. Chemicals with acute lethality values not meeting the criteria values discussed in the previous section are not necessarily safe. In fact, many may be toxic to humans and may represent hazards to the community in accidental release situations. The Agency identified some of these potentially toxic chemicals using criteria based on factors such as high production volume, acute lethality, and known risk, as indicated by the fact that these chemicals have caused death and injury in accidents.

c. List of 402 Chemicals: Application of the criteria discussed above to the RTECS data base and subsequent review of the TSCA Inventory and the FIFRA active pesticide ingredient list led to the identification of 378 chemicals. In addition, one chemical meeting the toxicity criteria was identified from the Premanufacture Notices. Twenty-three additional chemicals were identified as potentially hazardous, using the criteria described above for "other toxic chemicals". These chemicals were added to the list on the basis of toxicity, high production volume, and known risk. The list of 402 extremely hazardous substances is set forth in Appendices D and E.

The Agency recognizes that the criteria used to establish the extremely hazardous substance list address only lethality, and do not account for all effects that may be associated with acute exposure to chemicals. Criteria are being considered for other health

effects after acute exposures to toxic chemicals. In addition, section 302 requires the Agency to also consider long-term health effects resulting from short-term exposures to these chemicals. The Agency does not presently have sufficient data on such effects and requests data from commenters on chronic effects from short-term exposures and comments on how these effects should be incorporated into criteria for revisions to the list. The Agency also requests any other comments on the appropriate criteria for additions to or deletions from the list.

A companion proposed rule, published elsewhere in today's Federal Register, specifically proposes the addition and deletion of certain substances from Appendices D and E.

## 2. Threshold Planning Quantities

**A. Statutory Requirement:** Under section 302 the Agency is required to develop threshold planning quantities for each of the 402 chemicals on the list of extremely hazardous substances and publish interim final quantities simultaneously with publication of the list. The threshold planning quantity is used to trigger reporting by facilities to the State emergency response commission. Any facility that has one or more of the chemicals on the list of extremely hazardous substances in quantities equal to or greater than the threshold planning quantity must provide notification to State emergency response commissions by April 17, 1987.

Section 302 specifies that the planning quantities may be based upon classes or categories of chemicals. If the Agency fails to develop threshold planning quantities for the chemicals on the extremely hazardous substances list, a quantity of two pounds is automatically established for each chemical.

**b. Development of Threshold Planning Quantities:** For many substances the potential for a serious accidental release resulting from an on-site quantity of two pounds is extremely remote. Therefore, threshold planning quantities of two pounds for all of the extremely hazardous chemicals could result in many unnecessary notifications, diverting the attention of emergency planners from facilities which may be of higher concern.

Because the Agency believes that the two pound threshold planning quantity for all 402 substances would overwhelm local emergency planning efforts and would not relate to the endangerment posed by individual substances, it is today establishing threshold planning quantities in lieu of the statutory level. The threshold planning quantities are designed to help State and local officials

identify those sites where there is a greater potential for harm to the surrounding community if a release were to occur, thereby focusing resources on the priority emergency planning problems.

**c. Methodology:** The Agency considered four alternative approaches for development of the threshold planning quantities:

**Approach 1. Specific Quantity Prediction.** Under this approach the Agency would determine the specific quantity of each chemical that, if accidentally released, would result in significant acute health effects at a fixed distance from the release site.

**Approach 2. Dispersion/Toxicity Ranking Method.** Under this approach the Agency would assign chemicals to threshold planning quantity categories based on an index that accounts for the toxicity, the potential to become airborne, and the downwind dispersion of each chemical in an accidental release.

**Approach 3. Toxicity Ranking Method.** Under this alternative the Agency would assign categories of threshold planning quantities based solely on a toxicity index.

**Approach 4. Two Pound Quantity for All Chemicals.** Under this option, the default quantity of two (2) pounds would be used.

After considerable analysis, the Agency has chosen to develop threshold planning quantities using Approach 2. The methodology used in each approach is presented below along with a discussion of the approaches and the reasons why the Agency believes Approach 2 is the most appropriate for establishing threshold planning quantities. For details on the methodologies employed, refer to the Threshold Planning Quantities Technical Support Document, which is available in the public docket for this rule. Comments are solicited on the various approaches and the methodologies. Information on alternative approaches also is being sought by the Agency for consideration in the development of a revised final rule.

### Methodology for Approach 1—Specific Quantity Prediction

The methodology for this approach is derived from the site specific guidance developed for the CEPP Interim Guidance. The methodology consists of initially determining a maximum short-term exposure concentration level in air ("level of concern") for each chemical that would not lead to serious health effects. The quantity of each chemical that would have to be released to the air

to reach the "level of concern" is estimated using techniques for atmospheric dispersion and assessing physical/chemical properties.

This approach is a complex process designed to provide a specific threshold planning quantity for each of the 402 extremely hazardous substances. This section discusses the derivation of levels of concern, assumptions, concerning distance and release circumstances, and the dispersion modeling techniques used in the development of the threshold planning quantities under this approach.

To perform this analysis, a level of concern must be selected for each chemical, a representative distance from the release site to the exposed population must be determined, and the conditions and modeling techniques for release and dispersion must be selected for each chemical.

A level of concern was considered to be the maximum concentration of an extremely hazardous substance in air that will not cause serious irreversible health effects in the general population when exposed to the substance for relatively short duration. At present, no such exposure levels have been established specifically for the general public. The National Academy of Sciences and others have been developing guidelines for estimating such levels for toxic chemicals. However, at this time, values for only a few chemicals have been established.

In lieu of a value developed for the general public, the Agency has identified a surrogate measure of such an exposure level. This approximation is the Immediately Dangerous to Life and Health (IDLH) level which is available for 92 of the chemicals on the list of extremely hazardous substances. This level established by the National Institute for Occupational Safety and Health (NIOSH) represents the maximum concentration of a substance in air to which a healthy worker can be exposed for 30 minutes and escape without suffering irreversible health effects or impairing symptoms.

The Agency recognizes that the IDLH may have some limitations as a measure for protecting the general population. First, the IDLH is based upon the response of a healthy, male worker population and does not take into account exposure of more sensitive individuals such as the elderly, children, or people with various health problems. Second, the IDLH is based upon a maximum 30 minute exposure period which may not be realistic for accidental airborne releases. Third, the IDLH may not indicate the

concentration that could result in serious but reversible injury. Based on these considerations, the development of more appropriate chemical emergency exposure levels for the general public has been identified as a high priority for the Agency.

However, the IDLH value, or an estimation of this value for substances that do not have a published IDLH, appears at present to be the best approximation of a level of concern available for planning purposes. IDLH values for those substances with published values were used in the calculations for establishing threshold planning quantities.

Levels of concern were estimated from acute animal toxicity test data for the substances that did not have published IDLH values.

In these instances, the concentration used to establish threshold planning quantities is determined from  $LC_{50}$ ,  $LC_{10}$ ,  $LD_{50}$ , or  $LD_{10}$  data. The following equations show how these data are converted to air concentrations to approximate the IDLH level: (1) Estimated level of concern =  $LC_{50} \times 0.1$ ; (2) estimated level of concern =  $LC_{10} \times 0.01$ ; (3) estimated level of concern =  $LD_{50} \times 0.01$ ; and (4) estimated level of concern =  $LD_{10} \times 0.1$ . As new information and methodologies become available in the future, the level of concern and the value derived for chemicals on the list should be re-evaluated.

A second critical input to the analysis is the distance from the source of the release to the exposed population. For the purposes of establishing planning quantities, the Agency chose a distance of 100 meters (330 feet) to represent the distance from a source inside a chemical facility to the point where the community might be exposed. The Agency believes that this distance is representative of the point at which the community might first be impacted for most situations. The Agency recognizes that it may be shorter than that found at large manufacturing facilities, (particularly those that also have a "buffer zone") or farther than that found at facilities located within urban centers. For example, an informal survey of chemical facilities in the Kanawha Valley (West Virginia) by the National Institute for Chemical Studies in Charleston, West Virginia, showed that the distances between storage vessels and residential housing may be as close as 25 feet (Meyer, 1986). However, there are limitations associated with atmospheric dispersion modeling techniques at distances less than 100 meters. Additionally, the Netherlands Safety Report Legislation

indicates that releases that travel more than 100 meters are judged to be major accidents (Van Deputte, 1982).

Once the level of concern for each chemical was determined and a fixed distance was established, dispersion modeling techniques were used to calculate the quantity of airborne chemical required to generate the level of concern at 100 meters. Although techniques have long been available and used to address air pollution and nuclear fallout, the uses of dispersion modeling techniques to simulate the behavior of chemicals released under accidental conditions for very short time spans are largely still under development. The Agency's comparison of the several available dispersion modeling techniques is described in the Threshold Planning Quantities Technical Support Document available in the public docket for this rule.

A third critical aspect in the development of the methodology is the assumption made concerning the release of the chemical. An accidental release could be caused by a number of events such as a process upset (e.g. runaway reactions, temperature or pressure equipment failures (such as pipe rupture, equipment seal failure, valve leaks), handling accidents (such as overfilling containers and puncturing drums with a forklift), or fires and explosions that affect nearby containers or storage vessels of toxic substances. The release scenario generally determines the nature of the emission source and source strength which are critical to the dispersion consequences. Therefore analysis of potential release scenarios in complex and critical to the outcome.

The chemicals on the list were segregated by ambient physical state and grouped as gas, liquid or solid. Gases and liquids represent about half of the 402 chemicals on the list; the remainder are solids. In analyzing the chemicals released, scenarios were developed as follows: Gases were assumed to be stored under pressure such that if a leak, rupture or process upset occurred, a relief valve would open or a rupture would occur, causing a gas jet to be released. Liquids were assumed to be spilled on the ground at ambient conditions and allowed to volatilize. Liquefied gases were also evaluated. Because neither of the two release scenarios above are appropriate for solids unless the solids are handled in molten or vaporized state, solids were assumed to be dispersed in powered form as an aerosol by some mechanical means (e.g. filtration unit failure, dust explosion, or other explosion) because this represents a more realistic

emergency release scenario. The sublimation of a solid as a result of a spill was considered and rejected because volatilization of solids is so slow that it does not present an emergency release hazard.

#### Advantages and Limitations of Approach 1

Approach 1 was designed to determine a specific individual quantity for each chemical for purposes of emergency planning. The quantities calculated using this approach ranged from below one pound (for certain extremely toxic gases) to millions of pounds (for relatively involatile substances). The apparent rigor of the methodology, however, is somewhat misleading due to the uncertainty in the level of concern (IDLH), the release scenarios selected, the source strength inputs, and the ability to model both the release and dispersion. Also, most dispersion techniques are compatible with only a limited number of the many potential release events that could occur; the Agency has no data to show whether these events represent typical or worst case situations.

Assumptions used with the modeling techniques also cause wide variations in the results. In the case of gases, variations of several orders of magnitude are possible depending on the pressure at which the gas is stored, size of the release opening, density and velocity of the escaping gas. An accidental release is an extremely dynamic event. The dynamics associated with accidental releases are not considered in this analysis since little information is available for the potential release conditions likely for the chemicals on the list.

Finally, even if the Agency was fully confident of the release scenario, emission source modeling and dispersion techniques, a number of key parameters in the analysis are site-specific. These parameters include the distance from the source to the community or fence line, the way in which the chemical is actually handled at the facility (e.g., at high temperatures and pressures, refrigerated, etc.), the topography of the area around the site, and prevailing meteorological conditions which can cause wide variation in the dispersion of airborne chemicals. In the absence of a valid empirical data base, the Agency must make assumptions concerning "reasonable" or "credible" characteristics of these site-specific factors. These assumptions are influenced by modeling capabilities as well as general knowledge of chemical manufacturing and processing



erations and greatly affect the accuracy of results.

For these reasons, the Agency has not used this approach to establish the threshold planning quantities in today's rule. However, because the selected methodology (Approach 2) relies on Approach 1 technical analyses, the Agency seeks comments and suggestions on the methodology used here for revision prior to issuance of a revised final rule.

#### Approach 2—Dispersion/Toxicity Ranking Method

The methodology for this approach makes use of the same technical analyses used in Approach 1 but uses them only to produce a ranking of the chemicals according to their potential to become airborne, dispersion potential and toxicological properties. This approach provides a basis for relative measures of concern rather than absolute values. Under Approach 2, the levels of concern are used as an index of toxicity, and physical state and volatility are used to assess their dispersion potential. The two indices are combined to produce an overall risk score or "ranking factor". Once the chemicals have been ranked, categories of quantity are assigned based on their relative ranking. The lowest rank (highest risk) are assigned low quantities and the highest rank (lowest risk) are assigned higher quantities.

To achieve this, the list of chemicals is again segregated by ambient physical state such as gas, liquid or solid. An index value is obtained by assuming that the level of concern is divided by the factor V, which represents the extent to which the material can become airborne and dispersed:

$$\text{Index} = \text{Level of Concern} / V$$

where V is the extent to which the chemical can become airborne. V is assumed to be 1 for chemicals that are gaseous at ambient conditions and for solids in powder form (e.g., flour, talc), that is, in an accidental release all of the chemical could become airborne. For liquids, V represents the extent of volatilization of a spilled quantity of liquid and is estimated by knowing the chemical's molecular weight and vapor pressure. See Attachment I at the end of this preamble for a derivation of the equations used to estimate V.

Once all the chemicals have been ranked, quantities are assigned to groups of chemicals on the list. In the Agency's evaluation of all of the chemicals, only nickel carbonyl is assigned a quantity of "any amount" and must be reported in any quantity because of its extremely high acute

toxicity. Other chemicals with a low index factor, based on the Agency's technical review, are assigned a quantity of two pounds, the default quantity given by the Congress. With the exception of nickel carbonyl, it is believed that the two-pound quantity represents a reasonable lower limit for the most extremely hazardous substances on the list. Chemicals with the highest index factors (or rank) were assigned a threshold planning quantity of 10,000 pounds. This ensures that any facility with as much as a tank wagon or truck load of any extremely hazardous substances would be required to notify the State commission. Between the limits of two pounds and 10,000 pounds, chemicals were assigned to intermediate categories of 100, 500 or 1,000 pounds based on order of magnitude ranges in the index values. The selection of the intermediate categories was based on standard container sizes between two and 10,000 pounds. In summary, the allocations were as follows:

Index value:	Threshold quantity (lb)
$< 1 \times 10^{-2}$	2
$> 10^{-2}$ to $< 10^{-1}$	100
$> 10^{-1}$ to $< 1$	500
$> 1$ to $< 10$	1,000
$> 10$	10,000

#### Advantages and Limitations of Approach 2

The methods utilized in constructing the exposure and toxicity indices for Approach 2 are based upon, and therefore share the limitations of the methodologies utilized in Approach 1. In particular, NIOSH's IDLH or the Agency's estimated level of concern is an imperfect measure or an approximation of acute toxicity for emergency release situations involving the general public. In addition, the dispersion index is based upon specific release event assumptions. Changes in such assumptions could lead to changes in the rankings to a certain degree. Nevertheless, the Agency believes that this approach provides a consistent relative ranking of the extremely hazardous substances.

The selection of the particular cutoff values for the quantities is based wholly on the relative ranking among all of the substances on the list. Since this is a relative ranking scheme, there is no precision associated with the numbers and they should not be construed as "safe" levels. Because the Agency cannot evaluate every release scenario, it is possible that a serious event could

occur with any quantity lower than the threshold planning quantity given by this approach. Conversely, some chemicals may be unlikely to cause serious events even at quantities significantly above their thresholds. However, the Agency believes that this approach yields threshold planning quantities which will focus initial community planning on those situations which present the greatest risk.

#### Methodology for Approach 3—Toxicity Ranking Method

This approach is similar to Approach 2 except that the chemicals on the list of extremely hazardous substances are ranked using only their level of concern as an index. As in Approach 2, the chemicals are assigned quantities ranging from any quantity for nickel carbonyl to 10,000 pounds with intermediate categories of 100, 500, and 1,000 pounds based upon a ranking of level of concern values.

#### Advantages and Limitations of Approach 3

By ignoring the potential for the chemical to become airborne, this approach simplifies the analysis but it may also distort local planning priorities. Although the Agency cannot assess all of the ways in which releases can occur, it is clear that physical state and vapor pressure greatly influence how much of the chemical actually gets into the air. Therefore, the Agency believes that consideration of the potential should be included in the development of a threshold planning quantity.

#### Approach 4—Default to 2 Pounds

Under this approach, EPA could take no action and allow the statutory thresholds to become effective.

#### Advantages and Limitations of Approach 4

A two pound quantity for each chemical is simple and straight-forward and ensures notification by facilities handling those chemicals that are deemed extremely hazardous in nature. However, it again ignores the potential for the chemical to actually become airborne, distorts local planning priorities and may cause local planning authorities to be overburdened by unnecessary notifications.

#### Conclusions

The Agency believes that Approach 2 is most appropriate for development of the threshold planning quantities because the quantities developed depend primarily on the toxicity of the chemical (level of concern) and degree

to which the chemical will become airborne; factors which are very important in deciding which chemicals are the most important from an emergency planning standpoint. The potential for the chemicals to become airborne is not considered in Approach 3. Although Approach 1 also addresses these factors, the apparent rigor of this methodology is not supported by the uncertainty of the assumptions and the models which must be applied. Therefore, the planning quantities derived from Approach 1 suggest a level of accuracy or precision that cannot reasonably be relied upon.

Technical support documents, which contain additional information on the approaches presented here and the outcome of applying the approaches, are available in the public docket. A list of these documents is set forth in Attachment II. Approach 1 provides a much broader range (from less than one pound to over one million pounds, depending upon the assumptions and models used) than the other approaches. The Threshold Planning Quantity Technical Support Document includes the results of applying Approach 1, using varying release scenarios and assumptions, for a representative group of chemicals. Approaches 2 and 3 result in a narrower range, with five planning quantity categories, and "any quantity" planning quantity for nickel carbonyl. Of these two latter approaches, only Approach 2 considers the degree to which the chemical will become airborne.

The Agency believes that limited State and local resources should be focused on those substances that potentially will cause the greatest harm should an accidental release occur. The quantities developed in Approach 2 meet the objective such that those that are most likely to cause serious problems (extremely toxic gases, solids likely to be readily dispersed, or highly volatile liquids) have lower quantities than those that might be toxic but are not likely to be released to the air.

The Agency applied the ranking methodology described in Approach 2 to the 402 extremely hazardous substances. Recognizing that a strictly mechanical application of this approach could lead to errors based on specific characteristics of individual chemicals, the Agency then subjected each chemical to a limited additional review to evaluate the technical reasonableness of the assignments. The threshold planning quantity allocations determined by the ranking methodology were examined and where appropriate changes to higher or lower threshold

classifications were made based upon other toxicity data, rapid absorption, chemical reactivity, specific handling, formulation, and use considerations and related factors. For example, sarin and tabun, which were assigned to the 100 pound category by the methodology applied, were assigned to the two pound category because information on their toxicity suggested that they may be even more toxic under conditions of an accidental release than is indicated by the estimated level of concern. Thirty chemicals were reassigned based on this review. The rationale for each such decision is being included in the public docket for this rulemaking. Finally one chemical, nickel carbonyl, had a ranking value so low the Agency decided that any quantity could be a potential problem. The threshold for this chemical was therefore set at "any quantity".

Further, in the case of Approach 2, it was decided that if a chemical in solid form is not handled or stored as a powder at a site and it is not reactive with air or water to become airborne or to form airborne toxic products or by-products (e.g., sodium cyanide), then it would be assigned a quantity of 10,000 lb. Although the Agency cannot identify which chemicals are stored or handled in powder form, it has identified 15 substances that are reactive with water or air which cannot be assigned a threshold planning quantity of 10,000 pounds regardless of their physical form. These substances are identified in the list of extremely hazardous substances and are discussed in the Technical Support Document on Reactive Solids, which is available in the public docket for this rule. The Agency solicits comments on whether nonreactive solids not handled as a powder should be deleted from the list of extremely hazardous substances, instead of assigning a default value of 10,000 pounds.

Many of the extremely hazardous chemicals are transported, used and stored in formulated products, which contain mixtures of chemicals. The potential hazard associated with extremely hazardous chemicals in mixtures depends on the concentration of the material as well as many factors specific to the composition of the formulations. The Agency has noted in the threshold planning quantities list, one case where it believes that common commercial formulations should not be considered for the purpose of notification under this regulation. In the case of hydrogen peroxide, the Agency does not believe that there is cause for concern with aqueous concentrations of equal to or less than 52-percent and

designates this exception on the list of extremely hazardous substances. The Agency solicits comments on this concept, which is discussed in more detail in the technical document which addresses response to public comment on the CEPP interim guidance.

In all other cases, and in the absence of more specific information, the Agency believes that mixtures of formulations containing one (1) percent or more of an extremely hazardous substance should be evaluated for notification purposes. This means a mixture containing less than 1% of an extremely hazardous substance need not be factored into the calculation of the threshold planning quantity. The rationale for the 1% rule is the low probability of the release of such a mixture delivering the threshold planning quantity of the extremely hazardous substance to the environment. OSHA has selected this cutoff value of its Hazard Communication Rule (29 CFR 1900.1200) for all hazards except carcinogens.

In evaluating whether to notify for mixtures, facility owners or operators should compare the appropriate threshold quantity with the weight of the extremely hazardous substance in the mixture. For example, if the threshold for a given chemical on the list is 100 pounds and that chemical is 20 percent by weight of a mixture, notification would be necessary if 500 pounds or more of that mixture is present at a facility. Note, however, that no such de minimis exemption exists for emergency release reporting under section 304.

The Agency seeks comments on the methodology chosen to determine threshold planning quantities. Specifically, the Agency seeks comments on:

- Whether the ranking methodology selected (Approach 2) is appropriate for the categorization of the extremely hazardous substances by threshold quantity, and if not, which other approach might be preferable and why.
- Whether the specific toxicity and exposure indices, the IDLH (or, calculated level of concern), and V<sub>c</sub>, respectively, chosen are appropriate for constructing the index.
- Whether the Agency has set the threshold planning quantities for the extremely hazardous chemicals (ranging from any to 10,000 pounds) too high or too low in order to provide state and local planning authorities the information with which to effectively begin their emergency planning activities.

- Whether it is appropriate to establish a percentage below which extremely hazardous components of mixtures do not have to be considered and, if so, whether one percent or some other percentage is an appropriate cutoff level.
- Whether the chemical specific quantity adjustments to the determinations made under Approach 2 properly considered the individual characteristics of the adjusted chemicals, and whether other chemicals on the list also require quantity adjustments.
- Whether assigning threshold planning quantities of 10,000 pounds to non-powder, non-reactive solids adequately addresses concerns for these materials.
- Whether it is appropriate not to consider certain common commercial formulations for purposes of notification under this regulation and whether the designated reporting limit of greater than 52 percent aqueous hydrogen peroxide is appropriate.

*C. Statutory Requirement of Interim Final Rulemaking and Solicitation of Public Comment*

Section 302 of Title III of SARA requires the Administrator to publish a list of extremely hazardous substances within 30 days of enactment. The initial list is required to be the same as the list of substances published in November, 1985 by the Administrator in Appendix A of the Chemical Preparedness Program Interim Guidance. In addition, section 302 specifically requires the Administrator to publish interim final regulations establishing a threshold planning quantity for each substance on the list, and to initiate a rulemaking to revise these threshold planning quantities. Failure to establish the threshold planning quantities results in statutorily established threshold planning quantities of two pounds.

Although this rule is statutorily required to be effective immediately, the Agency is also soliciting comment on all aspects of today's rule. In a companion proposed rule published elsewhere in today's Federal Register, the Agency is specifically initiating a rulemaking to revise today's rule as appropriate in response to public comment.

In addition, certain portions of today's rule have previously received the benefit of public scrutiny and comment. At the time the list of 402 extremely hazardous substances was first published by the Agency, it was part of a voluntary program to encourage localities to begin the process of planning for chemical contingencies occurring in their communities. Appendix A of the

Chemical Emergency Preparedness Program Interim Guidance document was made public in November, 1985. That guidance identified those substances for which it was not enough to merely focus attention on cleanup of releases. Rather, because these substances, upon release, posed immediate and serious threats to the surrounding community, emergency planning and release prevention was necessary for effective protection of human health and the environment.

At the time of publication, comments were requested on the methodology for establishing the CEPP list. EPA received comments on the toxicity data used for specific chemicals, and revisions based on those comments are discussed in section II.B.2.c. above. A summary of these comments and the Agency's response has been incorporated into the public docket for this rule.

Today we are requesting comments on all aspects of this rule and are specifically soliciting comments on the criteria for establishing the extremely hazardous substance list, the threshold planning quantities and the methodologies for establishment of the quantities.

Comments must be submitted within 45 days of the publication of this regulation in the Federal Register. Upon completion of the 45 day comment period, the threshold planning quantities and supporting regulations will be finalized in a subsequent final rule as required by section 302, using the comments received as guidance in revision of this interim final rule. The comment period is shorter than that provided for many Agency rules, but is essential in order to allow a final rule to be published before May 17, 1987, when facility notifications are due.

### III. Relationship to CERCLA

#### A. Relationship of Title III to CERCLA

Title III is a free-standing Title within SARA and thus is separate from, though closely related to, CERCLA. Because the Agency's CEPP effort was developed originally under CERCLA and because Title III emergency response and planning are closely linked to the hazardous substance release response program under CERCLA, the authorities and requirements created by Title III will be largely incorporated into the existing National Contingency Plan, established under CERCLA section 105.

#### B. Relationship of This Rulemaking to the National Contingency Plan

This rulemaking is a new Subpart I within the existing National Oil and Hazardous Substances Pollution

Contingency Plan (NCP) (40 CFR 300). The NCP provides for an efficient, coordinated and effective response to discharges of oil and releases of hazardous substances, pollutants and contaminants in accordance with the authorities of CERCLA and section 311 of the Clean Water Act. The NCP establishes the national organization, policy and procedures for preparedness and response to environmental incidents. The Agency is now in the process of developing a rulemaking to comprehensively revise the NCP to incorporate other changes under SARA and will evaluate placement of Title III rules.

#### C. Relationship of this Rule to CERCLA Section 103 Reporting Requirements

Under section 103 of CERCLA, any person in charge of a facility at which there is a release of a hazardous substance as defined in CERCLA section 101(14) equal to or in excess of its reportable quantity must report immediately to the National Response Center. The National Response Center will then alert the appropriate federal emergency response personnel of the release. This notification includes transportation incidents as well as fixed facility emergencies.

The notification to the State emergency response commission under section 302 is not triggered by a release incident but rather by the presence of certain quantities an extremely hazardous substance at a facility. No release or event of any kind is required for a section 302 report. This notification is an initial action in a process that culminates in the development of community emergency response plans. Section 304 in contrast, establishes reporting requirements similar to CERCLA Section 103 release reporting. However, instead of requiring notification only to the National Response Center when certain quantities of certain chemicals are released, facilities must under section 304 also notify State and local emergency response officials of these releases.

A comparison of the reportable quantities established by the Agency under CERCLA for the purposes of emergency response with the threshold planning quantities in today's rule indicates that the quantities established under these lists are not entirely comparable. In fact, 26 adjusted reportable quantities were higher than the threshold planning quantities for the same extremely hazardous substance. As a result, emergency planning would be required for an amount on the plant

site which, if entirely released, would not require a reporting to the National Response Center or to the State commission. This has occurred as a result of the use of two different approaches for establishing reportable quantities and threshold planning quantities. Unlike CERCLA reportable quantities, the threshold planning quantities are based upon exposure potential. CERCLA reportable quantities are based solely on the intrinsic chemical and physical properties, or toxicity, of a hazardous substance.

During rulemakings to revise the final rule and to adjust reportable quantities under CERCLA and Title III, the Agency intends to evaluate and address, as appropriate, inconsistencies between the two methodologies, the underlying data base of each, and the resulting quantities.

#### IV. Regulatory Analyses

##### A. Regulatory Impact Analysis

Rulemaking protocol under Executive Order 12291 requires that regulations be classified as "major" or "non-major" for purposes of review by the Office of Management and Budget. According to E. O. 12291, major rules are regulations that are likely to result in (1) An annual adverse (cost) effect on the economy of \$100 million, (2) a major increase in costs or prices for consumers, individual industries, federal, state, or local government, or geographical regions, or (3) significant adverse effects on competition, employment, investment, productivity, innovation, or the ability of United States based enterprises in domestic or export markets.

Because this rule was required by statute to be published in 30 days no further economic or regulatory impact analysis could be conducted by the Agency prior to the publication of this interim final rule. However, analyses of economic and regulatory impact will be completed for the revised final rule.

##### B. Regulatory Flexibility Analysis

The Regulatory Flexibility Act of 1980 requires that an analysis be performed for all rules that are likely to have a "significant impact on a substantial number of small entities." Based on the limited time available, the Agency did not conduct a formal flexibility analysis. However, the Agency has considered the impact on small entities and does not believe that this rule will have significant impact on a substantial number of small entities.

##### C. Paperwork Reduction Act

The reporting and notification requirements contained in this rule have

been approved by the Office of Management and Budget (OMB) under the provisions of the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 *et seq.* and have been assigned OMB control number 2050-0046.

#### V. Supporting Information

##### A. List of Subjects

Chemicals, hazardous substances, extremely hazardous substances, intergovernmental relations, community right-to-know, natural resources, Superfund, Superfund, Amendments and Reauthorization Act, air pollution control, chemical accident prevention, chemical emergency preparedness, threshold planning quantity, community emergency response plan, contingency planning, reporting and recordkeeping requirements.

Dated: November 12, 1986.

Lee M. Thomas,

Administrator.

##### Attachment I

##### Technical Details for Approach 2 Determination of the Threshold Planning Quantity

In Approach 2, the index for ranking the chemicals on the list is:

$\text{Index} = \text{Level of Concern} / V$

where V represents the extent to which the chemical can become airborne and dispensed. For gases and solids V equals one, meaning all of the chemical once released can be potentially airborne. For liquids, V is calculated by estimating the rate of volatilization (mass vaporized per time) per mass of liquid spilled. The V may be generated as follows using equations from Clements (1981) (see also TRC, 1986)

The evaporation rate of a liquid into stagnant air may be estimated by:

$$G = (1.74 \times 10^{-4} \text{ MKAP}) / (\text{RT})$$

where G is the generation rate in pounds/minute; M, the molecular weight; K, mass transfer coefficient (cm/sec); A, surface area of the spill (cm<sup>2</sup>); P is the vapor pressure of the chemical (mm Hg); R is the Universal Gas Constant (82.05 atm cm<sup>3</sup>/g-mole °K) and T is the temperature of the liquid in °K. The mass transfer coefficient may be approximated by referencing the unknown chemical to water:

$$K = 0.83 (18/M)^{0.66}$$

Combining equations gives:

$$G = (3.78 \times 10^{-4} M^{0.66} A P) / (\text{RT})$$

The surface area of a spill (or pool) is primarily a function of spilled quantity provided the spill occurs on a flat, non-absorbing surface. The depth of the pool is assumed to be 1 cm; although if the area around a storage vessel is diked or not flat where puddling could take

place, deeper levels could occur for the same surface area of spilled material. In the absence of specific information about the size of diked area for each liquid, we assume that the spill is 1 cm deep and has density about that of water (1 gm/cm<sup>3</sup>):

$$\text{Area (cm}^2\text{)} = 454 \text{ (gm/lb) } Q \text{ (lb)} / 1 \text{ (gm/cm}^3\text{)} \\ 1 \text{ (cm)} = 454 \text{ Q}$$

Substituting and assuming the liquid is at its boiling temperatures ( $P = 760$ ,  $T > \text{boiling point}$ ):

$$G/Q = V = 1.6 M^{0.66} / (T + 273)$$

where G/Q represents the rate of volatilization per mass of liquid spilled. Note that V was estimated for liquids at their boiling point rather than at ambient temperatures. Conditions during accidental releases are likely to vary and to involve heat (e.g. fires, exothermic runaway reactions or reactions with air or water) causing more rapid volatilization of the liquid. The Agency recognizes that spills at ambient temperatures are also likely and that the rate of volatilization may be impacted by heat from the surroundings, subcooling due to evaporation and flashing from superheated conditions. However, for purposes of developing a relative ranking between substances volatilization at boiling points was utilized and consideration of other conditions for all chemicals is not expected to greatly reorder the ranking of chemicals.

#### References

- Van de Putte, 1982. "The Safety Report Legislation and its Application in the Netherlands", T. Van de Putte, Directorate General of Labour, P.O. Box 69, 2273 KH, Voorburg (The Netherlands). Journal of Hazardous Materials, 7(1983) 131-144; July 16, 1982.
- Turner, 1970. "Workbook of Atmospheric Dispersion Estimates", NTIS Environmental Health Series, PB191482, USDIHEW, NAPCA, Cincinnati, OH, 1970.
- Meyer, 1986. Telephone discussion with G.I. Meyer, National Institute for Chemical Studies (NICS) Charleston, W.VA. July, 1986.
- TRC, 1986. "Evaluation and Assessment of Models for Emergency Response Planning" prepared for CMA, TRC Environmental Consultants, Inc. April 1986.
- Clements, 1981. "Mathematical Models for Estimating Workplace Concentration Levels: A Literature Review" USEPA, Clement Associates, October 1981.

#### Attachment II

##### List of Technical Support Documents

1. Responses to Public Comments on the Chemical Emergency Preparedness Program Interim Guidance and Chemical Profiles
2. Proposed Changes to the List of Extremely Hazardous substances
3. Chemicals that were Assigned Different Threshold Planning

Quantities from the Calculated Index Value

4. Reactive Solids Whose Threshold Planning Quantities Should Not Become 10,000 Pounds
5. Alphabetical Listing of Synonyms for the List of Extremely Hazardous Substances
6. Threshold Planning Quantities Technical Support Document
7. Technical Support Document for Determination of Levels of Concern
8. The Criteria Used to Identify Extremely Hazardous Substances
9. Chemical Emergency Preparedness Program Interim Guidance—November, 1986
10. Chemical Profiles on the List of 402 Extremely Hazardous Substances

For the reasons set out in the Preamble, Title 40 of the Code of Federal Regulations is amended as follows:

#### PART 300—NATIONAL OIL AND HAZARDOUS SUBSTANCES POLLUTION CONTINGENCY PLAN

1. The authority citation for Part 300 is revised to read as follows:

Authority: Sec. 105 Pub. L. 98-510, 94 Stat. 2764, 42 U.S.C. 9505 and sec. 311(c)(2), Pub. L. 92-500 as amended, 86 Stat. 865, 33 U.S.C. 1321(c)(2) and secs. 302, 303, 305, 325 and 328, Pub. L. 99-499; E.O. 12316, 46 FR 42237 (August 20, 1981); E.O. 11735, 38 FR 21243 (August 1973).

2. The table of contents of Part 300 is amended by adding a new Subpart I as follows:

#### PART 300—NATIONAL OIL AND HAZARDOUS SUBSTANCES POLLUTION CONTINGENCY PLAN

##### Subpart I—Emergency Planning and Community Right to Know

Sec.	Purpose.
300.91	Purpose.
300.92	Definitions.
300.93	Emergency planning.
300.94	Emergency release notification.
300.95	Penalties.

3. Following Subpart H in Part 300, a new Subpart I is added as follows:

##### Subpart I—Emergency Planning and Community Right to Know

###### § 300.91 Purpose.

This regulation establishes the list of extremely hazardous substances, threshold planning quantities, and facility notification responsibilities necessary for the development and implementation of State and local emergency response plans.

###### § 300.92 Definitions.

Terms not specifically defined in this section have the same meaning as in Subpart A of this part.

*Act* means the Superfund Amendments and Reauthorization Act of 1986.

*CERCLA Hazardous Substance* means a substance listed in Table 302.4 of 40 CFR Part 302.

*Commission* means the State of emergency response commission (or, for the purpose of emergency planning, the Governor if there is no commission) for the State in which the facility is located.

*Environment* includes water, air, and land and the interrelationship which exists among and between water, air, and land and all living things.

*Extremely hazardous substance* means a substance listed in Appendix D of this part.

*Facility* means all buildings, equipment, structures, and other stationary items which are located on a single site or on contiguous or adjacent sites and which are owned or operated by the same person (or by any person which controls, is controlled by, or under common control with, such person). For purposes of emergency release notification, the term includes motor vehicles, rolling stock, and aircraft.

*Hazardous Chemical* means any hazardous chemical as defined under § 1910.1200(c) of Title 29 of the Code of Federal Regulations, except that such term does not include the following substances:

(1) Any food, food additive, color additive, drug, or cosmetic regulated by the Food and Drug Administration.

(2) Any substance present as a solid in any manufactured item to the extent exposure to the substance does not occur under normal conditions of use.

(3) Any substance to the extent it is used for personal, family, or household purposes, or is present in the same form and concentration as a product packaged for distribution and use by the general public.

(4) Any substance to the extent it is used in a research laboratory or a hospital or other medical facility under the direct supervision of a technically qualified individual.

(5) Any substance to the extent it is used in routine agricultural operations or is a fertilizer held for sale by a retailer to the ultimate customer.

*Person* means any individual, trust, firm, joint stock company, corporation (including a government corporation), partnership, association, State, municipality, commission, political subdivision of a State, or interstate body.

*Release* means... spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment (including the abandonment or discarding of barrels, containers, and other closed receptacles) of any hazardous chemical, extremely hazardous substance, or CERCLA hazardous substance.

*Reportable quantity* means, for any CERCLA hazardous substance, the reportable quantity established in Table 302.4 of 40 CFR Part 302, for such substance; for any other substance, the reportable quantity is one pound.

*Threshold planning quantity* means for a substance listed in Appendix D, the quantity listed in the column "threshold planning quantity" for that substance.

###### § 300.93 Emergency planning.

(a) *Applicability.* The requirements of this section apply to any facility at which there is present an amount of any extremely hazardous substance in excess of its threshold planning quantity, or designated, after public notice and opportunity for comment, by the Commission or the Governor for the State in which the facility is located.

(b) *Emergency Planning Notification.* The owner or operator of a facility subject to this section shall provide notification to the commission that it is a facility subject to the emergency planning requirements of this subpart. Such notification shall be provided: (1) On or before May 17, 1987 or (2) within sixty days after a facility first becomes subject to the requirements of this section, whichever is later.

(c) *Facility Emergency Coordinator.* The owner or operator of a facility subject to this Section shall designate a facility representative who will participate in the local emergency planning process as a facility emergency response coordinator. The owner or operator shall notify the local emergency planning committee (or the Governor if there is no committee) of the facility representative on or before September 17, 1987 or 30 days after establishment of a local emergency planning committee, whichever is earlier.

(d) *Provision of Information.* (1) The owner or operator of a facility subject to this section shall inform the local emergency planning committee of any changes occurring at the facility which may be relevant to emergency planning.

(2) Upon request of the local emergency planning committee, the owner or operator of a facility subject to this section shall promptly provide to



the committee any information necessary for development or implementation of the local emergency plan.

Approved by the Office of Management and Budget under the control Number 2050-0046)

#### § 300.94 Emergency release notification.

(a) *Applicability.* The requirements of this Section apply to any facility: (1) At which a hazardous chemical is produced, used, or stored and (2) at which there is release of a reportable quantity of any extremely hazardous substance or CERCLA hazardous substance which results in exposure to persons outside of the boundaries of the facility. This Section does not apply to any such release which is a federally permitted release.

(b) *Notice Requirements.* (1) The owner or operator of a facility subject to this Section shall immediately notify the local emergency coordinator for the local emergency planning committee of any area likely to be affected by the release and the State emergency planning commission of any State likely to be affected by the release. If there is no local emergency planning committee or State emergency planning commission, notification shall be provided under this section to relevant local or state emergency response personnel.

(2) The notice required under this Section shall include the following to the extent known at the time of notice and so long as no delay in notice or emergency response results:

(i) The chemical name or identity of any substance involved in the release.

(ii) An indication of whether the substance is on the list referred to in section 302(a).

(iii) An estimate of the quantity of any such substance that was released into the environment.

(iv) The time and duration of the release.

(v) The medium or media into which the release occurred.

(vi) Any known or anticipated acute or chronic health risks associated with the emergency and, where appropriate, advice regarding medical attention necessary for exposed individuals.

(vii) Proper precautions to take as a result of the release, including evacuation (unless such information is readily available to the community emergency coordinator pursuant to the emergency plan).

(viii) The name and telephone number of the person or persons to be contacted for further information.

(3) As soon as practicable after a release which requires notice under (b)(1) of this section, such owner or operator shall provide a written follow-up emergency notice (or notices, as more information becomes available) setting forth and updating the information required under paragraph (b)(2) of this section, and including additional information with respect to—

(i) Actions taken to respond to and contain the release,

(ii) Any known or anticipated acute or chronic health risks associated with the release, and,

(iii) Where appropriate, advice regarding medical attention necessary for exposed individuals.

(4) *Exceptions.* (i) In lieu of the notices specified in paragraphs (b) (2) and (3) of this section, any owner or operator of a facility subject to this section from which there is a release of a CERCLA hazardous substance which is not an extremely hazardous substance and has a statutory reportable quantity may provide the same notice required under CERCLA section 103(a) to the local emergency planning committee.

(ii) In lieu of the notices specified in paragraphs (b) (2) and (3) of this section, any owner or operator of a facility subject to this section from which there is a release during transportation or storage incident to transportation, may provide notice by dialing 911 or, in the absence of a 911 emergency telephone number, calling the operator.

(Approved by the Office of Management and Budget under the control number 2050-0046)

#### § 300.95 Penalties.

(a) *Civil Penalties.* Any person who fails to comply with the requirements of § 300.94 shall be subject to civil penalties of up to \$25,000 for each violation in accordance with section 325(b)(1) of the Act.

(b) *Civil Penalties for Continuing Violations.* Any person who fails to comply with the requirements of § 300.94 shall be subject to civil penalties of up to \$25,000 for each day during which the violation continues, in accordance with section 325(b)(2) of the Act. In the case of a second or subsequent violation, any such person may be subject to civil penalties of up to \$75,000 for each day the violation continues, in accordance with section 325(b)(2) of the Act.

(c) *Criminal Penalties.* Any person knowingly and willfully fails to provide notice in accordance with § 300.94 shall, upon conviction, be fined not more than \$25,000 or imprisoned for not more than two (2) years, or both (or, in the case of a second or subsequent conviction, shall be fined not more than \$50,000 or imprisoned for not more than five (5) years, or both, in accordance with 325(b)(4) of the Act.

3. Following Appendix C of Part 300 new Appendix D and Appendix E are added as follows:

#### APPENDIX D.—LIST OF EXTREMELY HAZARDOUS SUBSTANCES, THRESHOLD PLANNING QUANTITIES, AND REPORTABLE QUANTITIES

(Alphabetical Order)

Chemical name	CAS No.	Ambient physical state	Threshold planning quantity (pounds)	Reportable quantity (pounds)
Acetone cyanohydrin	75-86-5	Liquid	1,000	10
Acetone thiosemicarbazide	1752-30-3	Solid	1,000	10
Acrolein	107-02-8	Liquid	500	1
Acrylamide	79-06-1	Solid	1,000	5,000
Acrylonitrile	107-13-1	Liquid	10,000	100
Acrylyl chloride	814-68-6	Liquid	500	1
Adiponitrile	111-69-3	Liquid	1,000	1
Aldicarb	116-06-3	Solid	100	1
Aldrin	309-00-2	Solid	500	1
Ethyl alcohol	107-18-6	Liquid	1,000	10
Ethylamine	107-11-9	Liquid	500	1
Ammonium phosphide	20859-73-8	Solid	500	100
Aminopentane	54-82-6	Solid	500	1
Ammonia	78-07-5	Liquid	500	1
Ammonium oxalate	3734-07-2	Solid	100	1
Ammonia	7804-41-7	Gas	500	100
Ammonium chloroplatinate	16919-58-7	Solid	10,000	1
Amphetamine	300-82-9	Liquid	1,000	1
Aniline	62-55-3	Liquid	1,000	5,000

## APPENDIX D.—LIST OF EXTREMELY HAZARDOUS SUBSTANCES, THRESHOLD PLANNING QUANTITIES, AND REPORTABLE QUANTITIES—Continued

(Alphabetical Order)

Chemical name	CAS No.	Ambient physical state	Threshold planning quantity (pounds)	Reportable quantity (pounds)
Aniline, 2,4,6-trimethyl.....	88-05-1	Liquid.....	500	
Antimony pentachloride.....	7783-70-2	Liquid.....	500	
Antimony A.....	1397-84-0	Solid.....	* 1,000	
Antu.....	86-88-4	Solid.....	500	
Arsenic pentoxide.....	1303-28-2	Solid.....	100	1,000
Arsenous oxide.....	1327-53-3	Solid.....	500	* 5,000
Arsenous trichloride.....	7784-34-1	Liquid.....	500	* 5,000
Arsine.....	7784-42-1	Gas.....	100	
Azinphos-ethyl.....	2642-71-9	Solid.....	100	
Azinphos-methyl.....	86-50-0	Solid.....	2	
Bacitracin.....	* 1405-87-4(a)	Solid.....	10,000	
Benzal chloride.....	98-87-3	Liquid.....	500	* 1,000
Benzenamine, 3-(trifluoromethyl).....	98-16-8	Liquid.....	500	
Benzene, 1-(chloromethyl)-4-Nitro.....	100-14-1	Solid.....	500	
Benzenesulfonic acid.....	98-05-5	Solid.....	2	
Benzenesulfonyl chloride.....	* 98-09-9	Liquid.....	10,000	
Benzotrithionide.....	98-07-7	Liquid.....	100	
Benzyl chloride.....	100-44-7	Liquid.....	500	* 100
Benzyl cyanide.....	140-29-4	Liquid.....	1,000	
Bicyclo[2.2.1]heptane-2-carbonitrile, 5-chloro-6-(((methylamino)Carbonyloxy)lm.....	15271-41-7	Solid.....	500	
Bis(chloromethyl) ketone.....	534-07-6	Solid.....	2	
Bitoscanate.....	4044-65-9	Solid.....	500	
Boron trichloride.....	10294-34-5	Liquid.....	500	
Boron trifluoride.....	7637-07-2	Gas.....	500	
Boron trifluoride compound with methyl ether (1:1).....	353-42-4	Liquid.....	1,000	
Bromadiolone.....	28772-56-7	Solid.....	100	
Bromine.....	7726-95-6	Liquid.....	500	
Butadiene.....	* 106-99-0	Gas.....	10,000	
Butyl isovalerate.....	* 109-19-3	Liquid.....	10,000	
Butyl vinyl ether.....	* 111-34-2	Liquid.....	10,000	
C.I. basic green 1.....	* 633-03-4	Solid.....	10,000	
Cadmium oxide.....	1306-19-0	Solid.....	100	
Cadmium stearate.....	2223-93-0	Solid.....	* 1,000	
Calcium arsenate.....	7718-44-1	Solid.....	500	* 1,000
Camphchlor.....	8001-35-2	Solid.....	500	
Cantharidin.....	58-25-7	Solid.....	100	
Carbaryl chloride.....	51-83-2	Solid.....	500	
Carbenic acid, methyl-, 0-(((2,4-Dimethyl-1, 3-Dioxolan-2-yl)Methylene)Amino)-.....	26418-73-8	Solid.....	100	
Carbofuran.....	1563-66-2	Solid.....	2	10
Carbon disulfide.....	75-15-0	Liquid.....	10,000	100
Carbophenothion.....	786-18-6	Liquid.....	500	
Carvone.....	* 2244-18-8	Liquid.....	10,000	
Chlordane.....	57-74-8	Liquid.....	1,000	
Chlorfenvinfos.....	470-90-6	Liquid.....	500	
Chlorine.....	7782-50-5	Gas.....	100	10
Chlormephos.....	24934-91-6	Liquid.....	500	
Chlormequat chloride.....	999-81-5	Solid.....	1,000	
Chloroacetaldehyde.....	* 107-20-0	Liquid.....	10,000	1,000
Chloroacetic acid.....	79-11-8	Solid.....	100	
Chloroethanol.....	107-07-3	Liquid.....	500	
Chloroethyl chloroformate.....	627-11-2	Liquid.....	1,000	
Chloroform.....	67-66-3	Liquid.....	10,000	* 5,000
Chloromethyl ether.....	542-88-1	Liquid.....	1,000	
Chloromethyl methyl ether.....	107-30-2	Liquid.....	* 100	
Chlorophacnone.....	3691-35-8	Solid.....	100	
Chloroxuron.....	1982-47-4	Solid.....	500	
Chlorothiophos.....	21923-23-9	Liquid.....	1,000	
Chlorine chloride.....	10025-73-7	Solid.....	2	
Cobalt.....	* 7440-48-4	Solid.....	10,000	
Cobalt carbonyl.....	10210-68-1	Solid.....	100	
Cobalt, ((2,2'-(1,2-ethanedithio)bis(nitro(methoxy)dyne))bis(6-fluorophenolato))((2).....	62207-76-5	Solid.....	100	
Colchicine.....	64-86-8	Solid.....	100	
Coumatufuryl.....	* 117-52-2	Solid.....	10,000	
Coumatophos.....	56-72-4	Solid.....	100	10
Coumatetralyl.....	5836-29-3	Solid.....	500	
Cresol, o.....	95-48-7	Solid.....	1,000	* 1,000
Crimidine.....	535-89-7	Solid.....	100	
Crotonaldehyde.....	4170-30-3	Liquid.....	1,000	100
Crotonaldehyde, (E)-.....	123-73-9	Liquid.....	1,000	100
Cyanogen bromide.....	506-68-3	Solid.....	500	1,000
Cyanogen iodide.....	506-78-5	Solid.....	1,000	
Cyanophos.....	2636-26-2	Liquid.....	1,000	
Cyanuric fluoride.....	675-14-9	Liquid.....	100	
Cycloheximide.....	66-81-9	Solid.....	100	
Cyclohexylamine.....	108-91-8	Liquid.....	10,000	
Cyclopentane.....	* 297-92-3	Liquid.....	10,000	
Decaborane (14).....	17702-41-9	Solid.....	500	
Demeton.....	8065-48-3	Liquid.....	500	
Demeton-s-methyl.....	919-86-8	Liquid.....	500	
Dialfos.....	10311-84-9	Solid.....	100	
Diborane.....	19287-45-7	Gas.....	100	
Diethyl phthalate.....	* 84-74-2	Liquid.....	10,000	10
Dichlorobenzalkonium chloride.....	* 8023-53-8	Solid.....	10,000	
Dichloroethyl ether.....	111-44-4	Liquid.....	10,000	
Dichloromethylphenylsilane.....	149-74-6	Liquid.....	1,000	
Dichlorvos.....	82-73-7	Liquid.....	1,000	10
Dicrotophos.....	141-66-2	Liquid.....	100	
Diepoxybutane.....	1464-53-5	Liquid.....	500	
Dimethyl chlorophosphate.....	614-49-3	Liquid.....	1,000	

## APPENDIX D.—LIST OF EXTREMELY HAZARDOUS SUBSTANCES, THRESHOLD PLANNING QUANTITIES, AND REPORTABLE QUANTITIES—Continued

(Alphabetical Order)

Chemical name	CAS No.	Ambient physical state	Threshold planning quantity (pounds)	Reportable quantity (pounds)
Diethyl-p-phenylenediamine	* 93-05-0	Liquid	10,000	
Diethylcarbamazine citrate	1642-54-2	Solid	100	
Digtoxin	71-63-8	Solid	* 100	
Diglycidyl ether	2238-07-5	Liquid	1,000	
Digoxin	20830-75-5	Solid	100	
Dimelox	115-26-4	Liquid	500	
Dimethoate	60-51-5	Solid	500	
Dimethyl phosphorochlorodithioate	2524-03-0	Liquid	500	
Dimethyl phthalate	* 131-11-3	Liquid	10,000	5,000
Dimethyl sulfate	77-78-1	Liquid	500	* 1
Dimethyl sulfide	75-18-3	Liquid	100	
Dimethyl-p-phenylenediamine	99-98-9	Solid	2	
Dimethyldichlorosilane	75-78-5	Liquid	10,000	
Dimethylhydrazine	57-14-7	Liquid	1,000	
Dimetilan	644-64-4	Solid	500	
Dimrocresol	534-52-1	Solid	2	
Dinoseb	88-85-7	Solid	100	1,000
Dinoterb	1420-07-1	Solid	500	
Dioctyl phthalate	* 117-84-0	Liquid	10,000	5,000
Dioxathion	78-34-2	Liquid	500	
Dioxolane	* 646-06-0	Liquid	10,000	
Diphacnone	82-66-6	Solid	2	
Diphosphoramidate, octamethyl-	152-16-9	Liquid	100	100
Disulfoton	298-04-4	Liquid	500	
Dithiazanine iodide	514-73-8	Solid	500	
Dithioburet	541-53-7	Solid	100	100
Emetine, dihydrochloride	316-42-7	Solid	1,000	
Endosulfan	115-29-7	Solid	2	
Endothion	2778-04-3	Solid	500	
Endrin	72-20-8	Solid	500	
Epichlorohydrin	106-89-8	Liquid	1,000	* 1,000
EPN	2104-64-5	Solid	100	
Ergocalciferol	50-14-6	Solid	* 1,000	
Ergotamine tartrate	379-79-3	Solid	500	
Ethanesulfonyl chloride, 2-chloro-	1622-32-8	Liquid	500	
Ethanol, 1,2-dichloro-, acetate	10140-87-1	Liquid	1,000	
Ethion	563-12-2	Liquid	1,000	10
Ethoprophos	13194-48-4	Liquid	1,000	
Ethyl thiocyanate	542-90-5	Liquid	10,000	
Ethylbis(2-chloroethyl)amine	538-07-8	Liquid	10,000	
Ethylene fluorohydrin	371-62-0	Liquid	* 2	
Ethylene oxide	75-21-8	Gas	1,000	* 1
Ethylenediamine	107-15-3	Liquid	10,000	5,000
Ethylenimine	151-56-4	Liquid	500	
Ethylmercuric phosphate	* 2235-25-8	Solid	10,000	
Fenamphos	22224-92-6	Solid	2	
Fenitrothion	122-14-5	Liquid	500	
Fensulfothion	115-90-2	Liquid	1,000	
Fluometil	4301-50-2	Solid	100	
Fluorine	7782-41-4	Gas	100	10
Fluoroacetamide	640-19-7	Solid	* 2	100
Fluoroacetic acid	144-49-0	Solid	2	
Fluoroacetyl chloride	359-06-8	Liquid	* 2	
Fluorouracil	51-21-8	Solid	500	
Fonofos	944-22-9	Liquid	500	
Formaldehyde	50-00-0	Gas	500	* 1,000
Formaldehyde cyanohydrin	107-16-4	Liquid	10,000	
Formetanate	23422-53-9	Solid	100	
Formothion	2540-82-1	Liquid	100	
Formparanate	17702-57-7	Solid	100	
Fosthietan	21548-32-3	Liquid	500	
Fubendazole	3878-19-1	Solid	100	
Furan	110-00-8	Liquid	500	100
Gallium trichloride	13450-90-3	Solid	500	
Hexachlorocyclopentadiene	77-47-4	Liquid	500	* 1
Hexachloronaphthalene	* 1335-87-1	Solid	10,000	
Hexamethylenediamine, N,N'-obutyl-	4835-11-4	Liquid	500	
Hydrazine	302-01-2	Liquid	1,000	* 1
Hydrocyanic acid	74-90-8	Gas	100	10
Hydrogen chloride	7647-01-0	Gas	500	5,000
Hydrogen fluoride	7664-39-3	Gas	100	100
Hydrogen peroxide (concentration greater than 52%)	7722-84-1	Liquid	1,000	
Hydrogen selenide	7783-07-5	Gas	2	
Hydrogen sulfide	7783-06-4	Gas	500	100
Hydroquinone	123-31-9	Solid	500	
Indomethacin	* 53-86-1	Solid	10,000	
Indium tetrachloride	* 10025-97-5	Solid	10,000	
Iron, Pentacarbonyl	* 13463-40-6	Liquid	100	
Isobenzan	297-78-9	Solid	100	
Isobutyronitrile	78-82-0	Liquid	10,000	
Isocyanic acid, 3,4-dichlorophenyl ester	102-36-3	Solid	500	
Isodrin	465-73-6	Solid	100	
Isulfurphato	55-91-4	Liquid	* 100	100
Isophorone diisocyanate	4098-71-9	Solid	* 100	
Isopropyl chloroformate	108-23-6	Liquid	1,000	
Isopropyl formate	625-55-8	Liquid	500	
Isopropylmethylpyrazolyl dimethylcarbamate	119-38-0	Liquid	500	
Lactonitrile	78-97-7	Liquid	1,000	
Leptophos	21809-90-5	Solid	500	

## APPENDIX D.—LIST OF EXTREMELY HAZARDOUS SUBSTANCES, THRESHOLD PLANNING QUANTITIES, AND REPORTABLE QUANTITIES—Continued

(Alphabetical Order)

Chemical name	CAS No.	Ambient physical state	Threshold planning quantity (pounds)	Reportable quantity (pounds)
Lewisite	541-25-3	Liquid	* 2	1
Lindane	58-89-9	Solid	1,000	1
Lithium hydride	7530-67-8	Solid	* 100(b)	1,000
Malononitrile	109-77-3	Solid	500	1
Manganese, tetracarbonyl methyldicyclopentadienyl	12108-13-3	Liquid	10,000	1
Mechlorethamine	51-75-2	Liquid	* 2	1
Mephosfolan	950-10-7	Liquid	500	1
Mercuric acetate	1600-27-7	Solid	500	1
Mercuric chloride	7487-94-7	Solid	500	1
Mercuric oxide	21908-53-2	Solid	500	1
Mesitylene	* 108-67-8	Liquid	10,000	1
Methacrolein diacetate	10476-95-6	Liquid	1,000	1
Methacrylic anhydride	760-93-0	Liquid	500	1
Methacrylonitrile	126-98-7	Liquid	10,000	1,000
Methacryloyl chloride	920-46-7	Liquid	100	1
Methacryloyloxyethyl isocyanate	30674-80-7	Liquid	500	1
Methamidophos	10265-92-6	Solid	100	1
Methanesulfonyl fluoride	558-25-8	Liquid	1,000	1
Methidathion	950-37-8	Solid	500	1
Methiocarb	2032-65-7	Solid	500	10
Methomyl	16752-77-5	Solid	1,000	100
Methoxyethylmercuric acetate	151-38-2	Solid	500	1
Methyl 2-chloroacrylate	80-63-7	Liquid	500	1
Methyl bromide	74-83-9	Gas	1,000	1,000
Methyl chloroformate	79-22-1	Liquid	10,000	1,000
Methyl disulfide	624-92-0	Liquid	100	1
Methyl isocyanate	624-83-9	Liquid	500	1
Methyl isothiocyanate	556-51-6	Solid	* 500	1
Methyl mercaptan	74-83-1	Gas	500	100
Methyl phenkapton	3735-23-7	Liquid	500	1
Methyl phosphonic dichloride	676-97-1	Solid	* 100	1
Methyl thiocyanate	556-64-9	Liquid	10,000	1
Methyl vinyl ketone	78-94-4	Liquid	2	1
Methylhydrazine	60-34-4	Liquid	500	10
Methylmercuric dicyanamide	502-39-6	Solid	500	1
Methyltrichlorosilane	75-79-6	Liquid	10,000	1
Metolcarb	1129-41-5	Solid	100	1
enphos	7786-34-7	Liquid	500	10
exicarbale	315-18-4	Solid	500	1,000
Mitomycin C	50-07-7	Solid	500	1
Monocrotophos	6923-22-4	Solid	2	1
Muscimol	2763-96-4	Solid	500	1,000
Mustard gas	505-60-7	Liquid	1,000	1
Nickel	* 7440-02-0	Solid	10,000	1
Nickel carbonyl	13463-39-3	Liquid	* Any	1
Nicotine	54-11-5	Liquid	* 100	100
Nicotine sulfate	65-30-5	Solid	100	1
Nitric acid	7697-37-2	Liquid	1,000	1,000
Nitric oxide	10102-43-9	Gas	* 100	10
Nitrobenzene	98-95-3	Liquid	10,000	1,000
Nitrocyclohexane	1122-50-7	Liquid	500	1
Nitrogen dioxide	10102-44-0	Gas	100	10
Nitrosodimethylamine	62-75-9	Liquid	500	1
Norbormide	991-42-4	Solid	100	1
Organorhodium complex (PMN-82-147)	0	Solid	2	1
Orotic acid	* 65-86-1	Solid	10,000	1
Osmium tetroxide	* 20816-12-0	Solid	10,000	1,000
Ouabain	630-60-4	Solid	* 100	1
Oxamyl	23135-22-0	Solid	100	1
Oxetane, 3,3-bis(chloromethyl)-	78-71-7	Liquid	500	1
Oxydisulfoton	2497-07-6	Liquid	1,000	1
Ozone	10028-15-6	Gas	100	1
Paraquat	1910-42-5	Solid	2	1
Paraquat methosulfate	2074-50-2	Solid	2	1
Permethrin	56-38-2	Liquid	* 100	1
Parathion-methyl	298-00-0	Solid	* 100	100
Paris green	12002-03-8	Solid	500	100
Pentaborane	19624-22-7	Liquid	500	1
Pentachloroethane	* 76-01-7	Liquid	10,000	1
Pentachlorophenol	* 87-86-5	Solid	10,000	10
Pentadecylamine	2570-26-5	Solid	100	1
Peracetic acid	79-21-0	Liquid	500	1
Perchloromethylmercaptan	534-42-3	Liquid	500	100
Phenol	108-95-2	Solid	500	1,000
Phenol, 2,2'-thobis(4,6-dichloro-	97-18-7	Solid	100	1
Phenol, 2,2'-thobis(4-chloro-6-methyl-	4418-66-0	Solid	100	1
Phenol, 3-(1-methylethyl)-, methycarbamate	64-00-6	Solid	500	1
Phenoarsine, 10,10'-oxydi-	58-36-6	Solid	500	1
Phenyl dichloroarsine	696-28-6	Liquid	1,000	1
Phenyldiazine hydrochloride	59-88-1	Solid	1,000	1
Phenylmercury acetate	62-38-4	Solid	500	100
Phenylisothiocyanate	2097-19-0	Solid	500	1
Phenylthiourea	103-85-5	Solid	100	100
Phorate	298-02-2	Liquid	2	10
Phosacetim	4104-14-7	Solid	100	1
Phosfolan	947-02-4	Solid	100	1
Phosgene	75-44-5	Gas	2	10
Phosmet	732-11-6	Solid	2	1
Phosphamidon	13171-21-6	Liquid	100	1

## APPENDIX D.—LIST OF EXTREMELY HAZARDOUS SUBSTANCES, THRESHOLD PLANNING QUANTITIES, AND REPORTABLE QUANTITIES—Continued

[Alphabetical Order]

Chemical name	CAS No.	Ambient physical state	Threshold planning quantity (pounds)	Reportable quantity (pounds)
Phosphine	7803-51-2	Gas	500	100
Phosphonothioic acid, methyl-, O-ethyl O-(4-(methylthio)phenyl) ester	2703-13-1	Liquid	500	100
Phosphonothioic acid, methyl-, S-(2-bis(1-methylethyl)amino)ethyl O-ethyl ester	50782-69-9	Liquid	100	100
Phosphonothioic acid, methyl-, O-(4-nitrophenyl) O-ethyl ester	2665-30-7	Liquid	500	100
Phosphonic acid, dimethyl 4-(methylthio) phenyl ester	3254-63-5	Liquid	500	100
Phosphorous trichloride	7719-12-2	Liquid	1,000	1,000
Phosphorus	7723-14-0	Solid	500	100
Phosphorus oxychloride	10025-87-3	Liquid	500	1,000
Phosphorus pentachloride	10026-13-8	Solid	500	100
Phosphorus pentoxide	1314-56-3	Solid	2	10
Phytolquinone	84-80-0	Liquid	10,000	100
Physostigmine	57-47-6	Solid	100	100
Physostigmine, salicylate (1:1)	57-64-7	Solid	100	100
Picrotoxin	124-87-8	Solid	500	100
Picodine	110-89-4	Liquid	1,000	100
Piprotal	5281-13-0	Solid	100	100
Piriminyl-ethyl	23505-41-1	Liquid	1,000	100
Platinous chloride	10025-65-7	Solid	10,000	100
Platinum tetrachloride	13454-96-1	Solid	10,000	100
Potassium arsenite	10124-50-2	Solid	500	1,000
Potassium cyanide	151-50-8	Solid	100	100
Potassium silver cyanide	505-61-6	Solid	500	100
Promecarb	2631-37-0	Solid	1,000	100
Propargyl bromide	106-96-7	Liquid	2	10
Propiolactone, beta-	57-57-9	Liquid	500	100
Propionitrile	107-12-0	Liquid	500	100
Propionitrile, 3-chloro-	542-76-7	Liquid	1,000	1,000
Propyl chloroformate	109-61-5	Liquid	500	100
Propylene glycol, allyl ether	1331-17-5	Liquid	10,000	100
Propylene oxide	75-56-9	Liquid	10,000	100
Propyleneimine	75-55-8	Liquid	10,000	100
Prothoate	2275-18-5	Solid	100	100
Pseudocumene	95-63-6	Liquid	10,000	100
Pyrene	129-00-0	Solid	1,000	5,000
Pyridine, 2-methyl-5-vinyl-	140-76-1	Liquid	500	100
Pyridine, 4-amino-	504-24-5	Solid	100	1,000
Pyridine, 4-nitro-, 1-oxide	1124-33-0	Solid	500	100
Pyriminyl	53558-25-1	Solid	1,000	100
Sodium trichloride	10049-07-7	Solid	10,000	100
Salcomine	14167-18-1	Solid	500	100
Sant	107-44-8	Liquid	2	10
Selenium oxychloride	7791-23-3	Liquid	500	100
Selenous acid	7738-00-8	Solid	1,000	100
Semicarbazide hydrochloride	553-41-7	Solid	1,000	100
Silane, (4-aminobutyl)diethoxymethyl-	3037-72-7	Liquid	1,000	100
Sodium anthraquinone-1-sulfonate	126-56-3	Solid	10,000	100
Sodium arsenate	7831-89-2	Solid	1,000	1,000
Sodium arsenite	7784-46-5	Solid	500	1,000
Sodium azide (Na(N <sub>3</sub> ))	26828-22-8	Solid	100	1,000
Sodium cacodylate	124-65-2	Solid	100	100
Sodium cyanide (Na(CN))	143-33-9	Solid	100	100
Sodium fluoroacetate	62-74-8	Solid	2	10
Sodium pentachlorophenolate	131-52-2	Solid	100	100
Sodium selenate	13410-01-0	Solid	100	100
Sodium selenite	10102-18-8	Solid	500	100
Sodium tellurite	10102-20-2	Solid	500	100
Strychnine	57-24-9	Solid	100	100
Strychnine, sulfate	60-41-3	Solid	100	100
Sulfotep	3689-24-5	Liquid	500	100
Sulfonide, 3-chloropropyl octyl	3589-57-1	Liquid	500	100
Sulfur dioxide	7448-09-5	Gas	500	100
Sulfur tetrafluoride	7783-80-4	Gas	100	100
Sulfur trioxide	7446-11-9	Solid	100	100
Sulfuric acid	7664-93-9	Liquid	1,000	1,000
Tabun	77-81-6	Liquid	2	100
Tellurium	13494-80-9	Solid	500	100
Tellurium hexafluoride	7783-80-4	Gas	2	100
Tepp	107-49-3	Liquid	100	100
Terbufos	13071-79-9	Liquid	500	100
Tetraethyllead	78-00-2	Liquid	100	100
Tetraethyltin	597-64-8	Liquid	100	100
Tetramethyl lead	75-74-1	Liquid	100	100
Tetrahydrofuran	109-14-8	Liquid	500	100
Thalic oxide	1314-32-5	Solid	10,000	100
Thallium sulfate	10031-59-1	Solid	100	100
Thallous carbonate	6533-73-9	Solid	100	100
Thallous chloride	7791-12-0	Solid	100	100
Thallous malonate	2757-18-8	Solid	100	100
Thallous sulfate	7446-18-6	Solid	100	100
Thiocarbamide	2231-57-4	Solid	1,000	100
Thiocyanic acid, 2-(benzothiazolylthio)methyl ester	21564-17-0	Liquid	10,000	100
Thiolanox	39196-18-4	Solid	100	100
Thiometon	640-15-3	Liquid	10,000	100
Thionazin	297-97-2	Liquid	500	100
Thiophenol	108-98-5	Liquid	500	100
Thiosenecarbazide	79-19-6	Solid	100	100
Thiourea, (2-chlorophenyl)-	344-82-1	Solid	100	100
Thiourea, (2-methylphenyl)-	614-78-8	Solid	500	100
Titanium tetrachloride	7550-45-0	Liquid	100	100



## APPENDIX D.—LIST OF EXTREMELY HAZARDOUS SUBSTANCES, THRESHOLD PLANNING QUANTITIES, AND REPORTABLE QUANTITIES—Continued

(Alphabetical Order)

Chemical name	CAS No.	Ambient physical state	Threshold planning quantity (pounds)	Reportable quantity (pounds)
Toluene 2,4-disocyanate	548-84-9	Liquid	500	10
Toluene 2,6-disocyanate	91-08-7	Liquid	100	10
Trans-1,4-dichlorobutene	110-57-6	Liquid	500	10
Triamphos	1031-47-6	Solid	500	10
Triazofos	24017-47-8	Liquid	500	10
Trichloro(chloromethyl)silane	1558-25-4	Liquid	100	10
Trichloro(dichlorophenyl)silane	27137-65-5	Liquid	500	10
Trichloroacetyl chloride	76-02-8	Liquid	500	10
Trichloroethylsilane	115-21-8	Liquid	10,000	10
Trichloronate	327-98-0	Liquid	1,000	10
Trichlorophenylsilane	19-13-5	Liquid	2	10
Trichlorophos	* 52-68-6	Solid	10,000	100
Triethoxysilane	998-30-1	Liquid	500	10
Trimethylchlorosilane	75-77-4	Liquid	1,000	10
Trimethylolpropane phosphite	824-11-3	Solid	500	10
Trimethyltin chloride	1066-45-1	Solid	500	10
Triphenyltin chloride	639-58-7	Solid	500	10
Tris(2-chloroethyl)amine	555-77-1	Liquid	1,000	10
Valinomycin	2001-95-8	Solid	* 1,000	10
Vanadium pentoxide	1314-62-1	Solid	* 100	1,000
Vinyl acetate monomer	108-05-4	Liquid	1,000	5,000
Vinylbornene	* 3048-64-4	Liquid	10,000	10
Warfarin	81-81-2	Solid	500	100
Warfarin sodium	129-06-6	Solid	1,000	10
Xylylene dichloride	28347-13-9	Solid	100	10
Zinc phosphide	1314-84-7	Solid	* 500	100
Zinc dichloro(4,4-dimethyl-5((((methylamino)carbonyl)oxy)methyl)pentanenitrile)	58270-08-9	Solid	100	10

\* Statutory reportable quantity for purposes of emergency notification under SARA section 304(a)(2).

\* Indicates that the reportable quantity is subject to change when the assessment of potential carcinogenicity and/or chronic toxicity is completed.

\* The calculated threshold quantity changed after technical review as described in the text.

\* This material is a reactive solid. The threshold planning quantity will not become 10,000 pounds for the non-powder form.

\* This chemical is proposed for deletion from list. Threshold planning quantity is in the interim assigned to the category of lowest concern, 10,000 pounds.

\* The statutory one-pound reportable quantity for methyl isocyanate under CERCLA section 102(b) may be adjusted in a future rulemaking action.

## APPENDIX E.—LIST OF EXTREMELY HAZARDOUS SUBSTANCES, THRESHOLD PLANNING QUANTITIES, AND REPORTABLE QUANTITIES

(CAS Order)

CAS No.	Chemical name	Ambient physical state	Threshold planning quantity (pounds)	Reportable quantity (pounds)
0	Organomercuric complex (PMN-82-147)	Solid	2	* 1
50-00-0	Formaldehyde	Gas	500	* 1,000
50-07-7	Mitomycin C	Solid	500	* 1
50-14-6	Ergocalciferol	Solid	* 1,000	10
51-21-8	Fluorouracil	Solid	500	10
51-75-2	Mechlorethamine	Liquid	* 2	10
51-83-2	Carbachol chloride	Solid	500	10
52-68-6*	Trichlorophos	Solid	10,000	100
53-86-1*	Indomethacin	Solid	10,000	10
54-11-5	Nicotine	Liquid	* 100	100
54-62-6	Azinoptern	Solid	500	10
55-91-4	Isofluorophate	Liquid	* 100	100
56-25-7	Cantharidin	Solid	100	10
56-38-2	Parathion	Liquid	* 100	10
56-72-4	Coumaphos	Solid	100	10
57-14-7	Dimethylhydrazine	Liquid	1,000	10
57-24-9	Strychnine	Solid	* 100	10
57-47-6	Physostigmine	Solid	100	10
57-57-8	Propiolestone, beta	Liquid	500	10
57-64-7	Physostigmine, salicylate (1:1)	Solid	100	10
57-74-9	Chlordane	Liquid	1,000	10
58-36-6	Phenoxarsine, 10, 10'-oxide	Solid	500	10
58-89-9	Lindane	Solid	1,000	10
59-88-1	Phenylhydrazine hydrochloride	Solid	1,000	10
60-34-4	Methylhydrazine	Liquid	500	10
60-41-3	Strychnine, sulfate	Solid	100	10
60-51-5	Dimethoate	Solid	500	10
62-36-4	Phenylmercury acetate	Solid	500	100
62-53-3	Aniline	Liquid	1,000	5,000
62-73-7	Dichlorvos	Liquid	1,000	10
62-74-8	Sodium fluoroacetate	Solid	2	10
62-75-9	Nitrosodimethylamine	Liquid	500	10
64-00-6	Phenol, 3-(1-methylethyl)-, methylethylamine	Solid	500	10
64-86-8	Colchicine	Solid	100	10
65-30-5	Nicotine sulfate	Solid	100	10
65-86-1*	Orobo acid	Solid	10,000	10
66-81-9	Cycloheximide	Solid	100	10
67-66-3	Chloroform	Liquid	10,000	* 5,000
71-63-6	Digitoxin	Solid	* 100	10
72-20-3	Endrin	Solid	500	10
74-83-8	Methyl bromide	Gas	1,000	1,000
74-90-8	Hydrocyanic acid	Gas	100	10
74-93-1	Methyl mercaptan	Gas	500	100
75-15-0	Carbon disulfide	Liquid	10,000	100
75-18-3	Dimethyl sulfide	Liquid	100	10

## APPENDIX E.—LIST OF EXTREMELY HAZARDOUS SUBSTANCES, THRESHOLD PLANNING QUANTITIES, AND REPORTABLE QUANTITIES

(Continued)

(CAS Order)

CAS No.	Chemical name	Ambient physical state	Threshold planning quantity (pounds)	Reportable quantity (pounds)
75-21-8	Ethylene oxide	Gas	1,000	
75-44-5	Phosgene	Gas	2	
75-55-8	Propyleneimine	Liquid	10,000	
75-56-9	Propylene oxide	Liquid	10,000	100
75-74-1	Tetramethyl lead	Liquid	# 100	10
75-77-4	Trimethylchlorosilane	Liquid	1,000	10
75-78-5	Dimethyldichlorosilane	Liquid	10,000	10
75-79-6	Methytrichlorosilane	Liquid	10,000	10
75-86-5	Acetone cyanohydrin	Liquid	1,000	10
76-01-7 *	Pentachloroethane	Liquid	10,000	10
76-02-8	Trichloroacetyl chloride	Liquid	500	10
77-47-4	Hexachlorocyclopentadiene	Liquid	500	10
77-78-1	Dimethyl sulfate	Liquid	500	10
77-81-8	Tabun	Liquid	# 2	10
78-00-2	Tetraethyllead	Liquid	# 100	10
78-34-2	Dioxathion	Liquid	500	10
78-53-5	Amiton	Liquid	500	10
78-71-7	Oxetane, 3,3-bis(chloromethyl)-	Liquid	500	10
78-82-0	Isobutyronitrile	Liquid	10,000	10
78-94-4	Methyl vinyl ketone	Liquid	2	10
78-97-7	Lactonitrile	Liquid	1,000	10
79-06-1	Acrylamide	Solid	1,000	5,000
79-11-8	Chloroacetic acid	Solid	100	10
79-19-6	Thiosemicarbazide	Solid	100	100
79-21-0	Peracetic acid	Liquid	500	10
79-22-1	Methyl Chloroformate	Liquid	10,000	1,000
80-63-7	Methyl 2-chloroacrylate	Liquid	500	10
81-51-2	Wartalin	Solid	500	100
82-66-6	Diphacnolone	Solid	2	10
84-74-2 *	Dibutyl phthalate	Liquid	10,000	10
84-80-0	Phytoquinone	Liquid	10,000	10
86-50-0	Azinphos-methyl	Solid	2	10
86-88-4	Antu	Solid	500	100
87-86-5 *	Pentachlorophenol	Solid	10,000	# 10
88-05-1	Aniline, 2,4,6-trimethyl-	Liquid	500	10
88-85-7	Dinoseb	Solid	100	1,000
88-08-7	Toluene, 2,6-dicyanato-	Liquid	100	100
89-05-0 *	Diethyl-p-phenylenediamine	Liquid	10,000	10
89-08-7	Cresol, o-	Solid	1,000	# 1,000
95-63-8 *	Pseudocumene	Liquid	10,000	10
97-18-7	Phenol, 2,2'-thio-bis(4,6-dichloro-)	Solid	100	10
98-05-5	Benzenearsonic acid	Solid	2	10
98-07-7	Benzotrithionide	Liquid	100	10
98-09-9 *	Benzenesulfonyl chloride	Liquid	10,000	100
98-13-5	Trichlorophenylsilane	Liquid	2	10
98-16-8	Benzenamine, 3-(trifluoromethyl)-	Liquid	500	10
98-87-3	Benzal chloride	Liquid	500	5,000
98-95-3	Nitrobenzene	Liquid	10,000	1,000
99-86-9	Dimethyl-p-phenylenediamine	Solid	2	10
100-14-1	Benzene, 1-(chloromethyl)-4-nitro-	Solid	500	10
100-44-7	Benzyl Chloride	Liquid	500	# 100
102-36-3	Isocyanic acid, 3,4-dichlorophenyl ester	Solid	500	10
103-85-5	Phenylthiourea	Solid	100	100
106-89-8	Epichlorohydrin	Liquid	1,000	# 1,000
106-96-7	Propargyl bromide	Liquid	2	10
106-99-0 *	Butadiene	Gas	10,000	10
107-02-8	Acrolein	Liquid	500	10
107-07-3	Chloroethanol	Liquid	500	10
107-11-9	Allylamine	Liquid	500	10
107-12-0	Propionitrile	Liquid	500	10
107-13-1	Acrylonitrile	Liquid	10,000	# 100
107-15-3	Ethylenediamine	Liquid	10,000	5,000
107-16-4	Formaldehyde cyanohydral	Liquid	10,000	10
107-18-6	Allyl alcohol	Liquid	1,000	100
107-20-0 *	Chloroacetaldehyde	Liquid	10,000	1,000
107-30-2	Chloromethyl methyl ether	Liquid	# 100	10
107-44-6	Sanin	Liquid	# 2	10
107-49-3	Tepp	Liquid	# 100	10
108-05-4	Vinyl acetate monomer	Liquid	1,000	5,000
108-23-6	Isopropyl chloroformate	Liquid	1,000	10
108-67-8 *	Mesitylene	Liquid	10,000	10
108-91-8	Cyclohexylamine	Liquid	10,000	10
108-95-2	Phenol	Solid	500	1,000
108-98-5	Thiophenol	Liquid	500	100
109-19-3 *	Butyl isovalerate	Liquid	10,000	10
109-61-5	Propyl chloroformate	Liquid	500	10
109-77-3	Malononitrile	Solid	500	1,000
110-00-9	Furan	Liquid	500	100
110-57-6	Trans-1,4-dichlorobutene	Liquid	500	10
110-89-4	Pipendine	Liquid	1,000	10
111-34-2 *	Butyl vinyl ether	Liquid	10,000	10
111-44-4	Dichloroethyl ether	Liquid	10,000	10
111-89-3	Adiponitrile	Liquid	1,000	10
115-21-9	Trichloroethylsilane	Liquid	10,000	10
115-26-4	Dymefox	Liquid	500	10
115-29-7	Endosulfan	Solid	2	10
115-90-2	Fensulfothion	Liquid	1,000	10
116-06-3	Aldicarb	Solid	# 100	10

## APPENDIX E.—LIST OF EXTREMELY HAZARDOUS SUBSTANCES, THRESHOLD PLANNING QUANTITIES, AND REPORTABLE QUANTITIES—Continued

(CAS Order)

CAS No	Chemical name	Ambient physical state	Threshold planning quantity (pounds)	Reportable quantity (pounds)
117-52-2	Coumalalyl	Solid	10,000	
117-84-0	Octyl phthalate	Liquid	10,000	
119-38-0	Isopropylmethylpyrazolyl dimethylcarbamate	Liquid	500	
122-14-5	Fenobithion	Liquid	500	
123-31-9	Hydroquinone	Solid	500	
123-73-9	Crotonaldehyde (E)	Liquid	1,000	
124-65-2	Sodium cacodylate	Solid	100	
124-87-8	Picrotoxin	Solid	500	
126-98-7	Methacrylonitrile	Liquid	10,000	100
128-56-3	Sodium anthraquinone-1 sulfonate	Solid	10,000	
129-00-0	Pyrene	Solid	1,000	
129-06-6	Warfarin sodium	Solid	1,000	
131-11-3	Dimethyl phthalate	Liquid	10,000	500
131-52-2	Sodium pentachlorophenolate	Solid	100	
140-29-4	Benzyl cyanide	Liquid	1,000	
140-76-1	Pyridine, 2-methyl-5-venyl-	Liquid	500	
141-66-2	Cyclophos	Liquid	100	
143-33-9	Sodium cyanide (NaCN)	Solid	100	
144-49-0	Fluoroacetic acid	Solid	2	
149-74-6	Dichloromethylphenylisilane	Liquid	1,000	
151-38-2	Methoxyethylmercuric acetate	Solid	500	
151-50-8	Potassium cyanide	Solid	100	
151-56-4	Ethyleneimine	Liquid	500	
152-16-9	Diphosphoramide, octamethyl-	Liquid	100	
287-92-3	Cyclopentane	Liquid	10,000	
297-78-9	Isobenzan	Solid	100	
297-97-2	Thioazur	Liquid	500	100
298-00-0	Parathion-methyl	Solid	100	100
298-02-2	Picrate	Liquid	2	
298-04-4	Disulfoton	Liquid	500	
300-62-9	Amphetamine	Liquid	1,000	
302-01-2	Hydrazine	Liquid	1,000	
309-00-2	Aldrin	Solid	500	
315-18-4	Mexacarbate	Solid	500	100
316-42-7	Emetine, dihydrochloride	Solid	1,000	
327-98-0	Trichloronate	Liquid	1,000	
353-42-4	Roron trifluoride compound with methyl ether (1.1)	Liquid	1,000	
359-06-8	Fluoroacetyl chloride	Liquid	2	
371-52-0	Ethylene fluorohydrin	Liquid	2	
379-79-3	Ergotamine tartrate	Solid	500	
465-73-6	Isodrin	Solid	100	
470-90-6	Chlorfenvinlos	Liquid	500	
502-39-6	Methylmercuric dicyanamide	Solid	500	
504-24-5	Pyridine, 4-amino-	Solid	100	100
505-60-2	Mustard gas	Liquid	1,000	
506-61-6	Potassium silver cyanide	Solid	500	
506-68-3	Cyanogen bromide	Solid	500	100
506-78-5	Cyanogen iodide	Solid	1,000	
509-14-8	Tetratetramethane	Liquid	500	
514-73-8	Orthazanine iodide	Solid	500	
534-07-6	Bis (chloromethyl) ketone	Solid	2	
534-52-1	Dinitroresol	Solid	2	
535-89-7	Chnidine	Solid	100	
538-07-8	Ethylbis (2-chloroethyl) amine	Liquid	10,000	
541-25-3	Lewisite	Liquid	2	
541-53-7	Dithiokurel	Solid	100	100
542-76-7	Propionitrile, 3-chloro-	Liquid	1,000	100
542-88-1	Chloromethyl ether	Liquid	1,000	
542-90-5	Ethyl thiocyanate	Liquid	10,000	
555-77-1	Tris (2-chloroethyl) amine	Liquid	1,000	
556-61-6	Methyl isothiocyanate	Solid	500	
556-64-9	Methyl thiocyanate	Liquid	10,000	
558-25-8	Methanesulfonyl fluoride	Liquid	1,000	
563-12-2	Ethion	Liquid	1,000	
563-41-7	Semicarbazide hydrochloride	Solid	1,000	
584-84-9	Toluene 2, 4-disocyanate	Liquid	500	100
594-42-3	Perchloromethylmercaptan	Liquid	500	100
597-64-8	Tetraethyltin	Liquid	100	
614-78-8	Thiourea, (2-methylphenyl)-	Solid	500	
624-83-9	Methyl isocyanate	Liquid	500	
624-92-0	Methyl disulfide	Liquid	100	
625-55-8	Isopropyl formate	Liquid	500	
627-11-2	Chloroethyl chloroformate	Liquid	1,000	
630-60-4	Quabain	Solid	100	
633-03-4	CI basic green 1	Solid	10,000	
639-58-7	Triphenyltin chloride	Solid	500	
640-15-3	Thiomelon	Liquid	10,000	
640-19-7	Fluoroacetamide	Solid	2	100
644-64-4	Dimetilan	Solid	500	
646-06-0	Dulane	Liquid	10,000	
675-14-9	Cyanuric fluoride	Liquid	100	
676-97-1	Methyl phosphonic dichloride	Solid	100	
696-28-6	Phenyl dichloroarsine	Liquid	1,000	
732-11-6	Phosmet	Solid	2	
760-93-0	Methacrylic anhydride	Liquid	500	
786-19-6	Carbophenothion	Liquid	500	
814-49-3	Diethyl chlorophosphate	Liquid	1,000	
814-68-6	Acrylyl chloride	Liquid	500	

## APPENDIX E.—LIST OF EXTREMELY HAZARDOUS SUBSTANCES, THRESHOLD PLANNING QUANTITIES, AND REPORTABLE QUANTITIES—Continued

(CAS Order)

CAS No.	Chemical name	Ambient physical state	Threshold planning quantity (pounds)	Reportable quantity (pounds)
824-11-3	Trimethylolpropane phosphite	Solid	500	
919-86-8	Demeton-S-methyl	Liquid	500	
920-46-7	Methacryloyl chloride	Liquid	100	
944-22-9	Fonofos	Liquid	500	1
947-02-4	Phospholan	Solid	100	1
950-10-7	Mephosfolan	Liquid	500	1
950-37-8	Metidathion	Solid	500	1
991-42-4	Norbornide	Solid	100	1
998-37-1	Tnethoxyslane	Liquid	500	1
999-81-5	Chlormequat chloride	Solid	1,000	1
1031-47-6	Tnamphos	Solid	500	1
1066-45-1	Trimethyltin chloride	Solid	500	1
1122-60-7	Nitrocyclohexane	Liquid	500	1
1124-37-0	Pyridine, 4-nitro-, 1-oxide	Solid	500	1
1129-41-5	Metolcarb	Solid	100	1
1303-28-2	Arsenic pentoxide	Solid	100	5,000
1306-19-0	Cadmium oxide	Solid	100	1
1314-32-5	Thallic oxide	Solid	10,000	100
1314-56-3	Phosphorus pentoxide	Solid	2	1
1314-62-1	Vanadium pentoxide	Solid	100	1,000
1314-84-7	Zinc phosphide	Solid	500	100
1327-53-3	Arsenous oxide	Solid	500	5,000
1331-17-5	Propylene glycol, alkyl ether	Liquid	10,000	
1335-87-1	Hexachloronaphthalene	Solid	10,000	
1397-94-0	Antrimycin A	Solid	1,000	
1405-87-4	Bactracin	Solid	1,000	
1420-07-1	Dinoterb	Solid	500	
1464-53-5	Depoxybutane	Liquid	500	
1558-25-4	Trichloro(chloromethyl)slane	Liquid	100	
1563-66-2	Carboluran	Solid	2	10
1600-27-7	Mercuric acetate	Solid	500	1
1622-32-8	Ethanesulfonyl chloride, 2-chloro-	Liquid	500	1
1642-54-2	Diethylcarbamazine citrate	Solid	100	1
1752-30-3	Acetone thiosemicarbazide	Solid	1,000	1
1910-42-5	Paraquat	Solid	2	
1982-47-4	Chloroxuron	Solid	500	1
201-95-8	Valnemycin	Solid	1,000	1
202-65-7	Methiocarb	Solid	500	10
2074-50-2	Paraquat methosulfate	Solid	2	1
2097-19-0	Phenylsulfatane	Solid	500	1
2104-64-5	EPN	Solid	100	1
2223-93-0	Cadmium stearate	Solid	1,000	1
2231-57-4	Thiocarbazine	Solid	1,000	1
2235-25-8	Ethylmercuric phosphate	Solid	10,000	1
2238-07-5	Diglycidyl ether	Liquid	1,000	1
2244-16-8	Carvone	Liquid	10,000	1
2275-18-5	Orthoate	Solid	100	1
2497-07-6	Oxydisulfoton	Liquid	1,000	1
2524-03-0	Dimethyl phosphorochloridothioate	Liquid	500	1
2540-82-1	Formithion	Liquid	100	1
2570-26-5	Pentadecylamine	Solid	100	1
2631-37-0	Promecarb	Solid	1,000	1
2636-26-2	Cyanophos	Liquid	1,000	1
2642-71-9	Azinphos-ethyl	Solid	100	1
2665-30-7	Phosphonothioic acid, methyl 0-(4-nitrophenyl) 0-phenyl ester	Liquid	500	1
2703-13-1	Phosphonothioic acid, methyl 0-ethyl 0-(4-(methylthio)phenyl) ester	Liquid	500	1
2757-18-8	Thallous malonate	Solid	100	1
2763-96-4	Muscimol	Solid	500	1,000
2778-04-3	Endothion	Solid	500	1
3037-72-7	Silane, (4-aminobutyl)dimethyl-	Liquid	1,000	1
3048-84-4	Vinylboromene	Liquid	10,000	1
3254-63-5	Phosphonic acid, dimethyl 4-(methylthio)phenyl ester	Liquid	500	1
3569-57-1	Sulfotep, 3-chloropropyl octyl	Liquid	500	1
3689-24-5	Sulfotep	Liquid	500	100
3691-35-8	Chlorophazone	Solid	100	1
3734-97-2	Amion oxalate	Solid	100	1
3735-23-7	Methyl phenkapton	Liquid	500	1
3878-19-1	Fuberazone	Solid	100	1
4044-65-9	Bitoscanate	Solid	500	1
4098-71-9	Isophorone diisocyanate	Solid	100	1
4104-14-7	Phosacetm	Solid	100	1
4170-30-3	Crotonaldehyde	Liquid	1,000	100
4301-50-2	Fluometol	Solid	100	1
4418-66-0	Phenol, 2,2'-thiois(4-chloro-6-methyl-	Solid	100	1
4835-11-4	Hexamethylenediamine, N,N'-dibutyl-	Liquid	500	1
5281-13-0	Piprotal	Solid	100	1
5344-82-1	Thiourea, (2-chlorophenyl)-	Solid	100	100
5836-29-3	Coumetetralyl	Solid	500	1
533-73-9	Thallous carbonate	Solid	100	100
5923-22-4	Monocrotophos	Solid	2	1
7440-02-0	Nickel	Solid	10,000	1
7440-48-4	Cobalt	Solid	10,000	1
7446-09-5	Sulfur dioxide	Gas	500	1
7446-11-9	Sulfur trioxide	Solid	100	1
7446-18-8	Thallous sulfate	Solid	100	100
7487-94-7	Mercuric chloride	Solid	500	1
7550-45-0	Titanium tetrachloride	Liquid	100	1
7580-67-8	Lithium hydride	Solid	100	1

## APPENDIX E.—LIST OF EXTREMELY HAZARDOUS SUBSTANCES, THRESHOLD PLANNING QUANTITIES, AND REPORTABLE QUANTITIES—Continued

[CAS Order]

CAS No	Chemical name	Ambient physical state	Threshold planning quantity (pounds)	Reportable quantity (pounds)
7631-89-2	Sodium arsenate	Solid	1,000	1,000
7637-07-2	Boron trifluoride	Gas	500	
7647-01-0	Hydrogen chloride	Gas	500	5,000
7664-39-3	Hydrogen fluoride	Gas	100	100
7664-41-7	Ammonia	Gas	500	100
7664-93-9	Sulfuric acid	Liquid	1,000	1,000
7697-37-2	Nitric acid	Liquid	1,000	1,000
7719-12-2	Phosphorous trichloride	Liquid	1,000	1,000
7722-84-1	Hydrogen peroxide (concentration greater than 25%)	Liquid	1,000	1
7723-14-0	Phosphorus	Solid	500	1
7726-95-6	Bromine	Liquid	500	1
7778-44-1	Calcium arsenate	Solid	500	1,000
7782-41-4	Fluorine	Gas	100	10
7782-50-5	Chlorine	Gas	100	10
7783-00-8	Selenous acid	Solid	1,000	100
7783-06-4	Hydrogen sulfide	Gas	500	100
7783-07-5	Hydrogen selenide	Gas	2	1
7783-60-0	Sulfur tetrafluoride	Gas	100	1
7783-70-2	Antimony pentafluoride	Liquid	500	1
7783-80-4	Tellurium hexafluoride	Gas	2	1
7784-34-1	Arsenous trichloride	Liquid	500	5,000
7784-42-1	Arsine	Gas	100	1
7784-46-5	Sodium arsenite	Solid	500	1,000
7786-34-7	Me. mphos	Liquid	500	10
7791-12-0	Thallous chloride	Solid	100	100
7791-23-3	Selenium Oxychloride	Liquid	500	1
7803-51-2	Phosphine	Gas	500	100
8001-35-2	Camphor	Solid	500	1
8023-53-8	Dichlorobenzalkonium chloride	Solid	10,000	1
8065-48-3	Demeton	Liquid	500	1
10025-65-7	Platinous chloride	Solid	10,000	1
10025-73-7	Chromic chloride	Solid	2	1
10025-87-3	Phosphorus oxychloride	Liquid	500	1,000
10025-97-5	Indium tetrachloride	Solid	10,000	1
10026-13-8	Phosphorus pentachloride	Solid	500	1
10028-15-6	Ozone	Gas	100	1
101-59-1	Thallium sulfate	Solid	100	100
101-07-7	Rhodium trichloride	Solid	10,000	1
10102-18-8	Sodium selenite	Solid	500	100
10102-20-2	Sodium tellurite	Solid	500	1
10102-43-9	Nitric oxide	Gas	100	10
10102-44-0	Nitrogen dioxide	Gas	100	10
10124-50-2	Potassium arsenite	Solid	500	1,000
10140-97-1	Ethanol, 1,2-dichloro-, acetate	Liquid	1,000	1
10210-68-1	Cobalt carbonyl	Solid	100	1
10265-92-6	Methamidophos	Solid	100	1
10294-34-5	Boron trichloride	Liquid	500	1
10311-84-9	Dialfos	Solid	100	1
10476-95-6	Methacrolen diacetate	Liquid	1,000	1
12002-03-6	Pans green	Solid	500	100
12108-13-3	Manganese, tricarbonyl methylcyclopentadienyl	Liquid	10,000	1
13071-79-9	Terbufos	Liquid	500	1
13171-21-6	Phosphamidon	Liquid	100	1
13194-48-4	Ethoprophos	Liquid	1,000	1
13410-01-0	Sodium selenate	Solid	100	1
13450-90-3	Gallium trichloride	Solid	500	1
13454-96-1	Platinum tetrachloride	Solid	10,000	1
13463-39-3	Nickel carbonyl	Liquid	100	1
13463-40-6	Iron pentacarbonyl	Liquid	100	1
13494-60-9	Tellurium	Solid	500	1
14167-18-1	Salcomine	Solid	500	1
15271-41-7	Bicyclo[2.2.1]heptane-2-carbonitrile, 5-chloro-6-(((methylamino)carbonyl)oxy)m	Solid	500	1
16752-77-5	Methomyl	Solid	1,000	100
16919-58-7	Ammonium chloroplatinate	Solid	10,000	1
17702-41-9	Decaborane(14)	Solid	500	1
17702-57-7	Formparanate	Solid	100	1
19287-45-7	Chlorane	Gas	100	1
19524-22-7	Pentaborane	Liquid	500	1
20816-12-0	Osmium tetroxide	Solid	10,000	1,000
20830-75-5	Digoxin	Solid	100	1
20859-73-8	Aluminum phosphide	Solid	500	100
21548-32-3	Fosfithelan	Liquid	500	1
21564-17-0	Thiocyanic acid, 2-(benzothiazolylthiomethyl ester	Liquid	10,000	1
21609-90-5	Leptaphos	Solid	500	1
21908-53-2	Mercuric oxide	Solid	500	1
21923-73-9	Chlorine phosphorus	Liquid	1,000	1
22224-92-6	Fenampophos	Solid	100	1
22-53-9	Oramyl	Solid	100	1
22-53-9	Formetanate	Solid	100	1
22-53-9	Phenyl ethyl	Liquid	1,000	1
24017-47-8	Triazofos	Liquid	500	1
24934-91-6	Chloromphos	Liquid	500	1
26419-73-8	Carbamic acid, methyl-, O-((2,4-dimethyl-1,3-dioxolan-2-yl)methyl)carbamoyl	Solid	100	1
26628-22-8	Sodium azide (NaN <sub>3</sub> )	Solid	100	1,000
27137-85-5	Trichloro(dichlorophenyl)silane	Liquid	500	1
28347-13-9	Xylene dichloride	Solid	100	1
28772-56-7	Bromadiolone	Solid	100	1
30674-80-7	Methacryloyl ethyl isocyanate	Liquid	500	1